

**WEB BASED TELECENTER TRAINING MANAGEMENT
SYSTEM AT YEVERN REGION IN LIBYA (WBTTMS)**

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WEB BASED TELECENTER TRAINING MANAGEMENT SYSTEM AT YEVERN REGION IN LIBYA (WBTTMS)

**A project submitted to Dean of the Awang Hag Salleh graduate School of Arts
and Science in partial fulfillment of the requirements for the degree Master of
Science (ICT) Universiti Utara Malaysia**

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ABSTRACT

In telecenters, the process of managing the training programs is still done manually therefore this study comes up with new website for ITU-UUM telecenter which help the telecenter management to manage the telecenter training programs easily where this study reduce the effort and time of managing the telecenter programs for the people. To develop such system, the general methodology has been used to develop the system, on the other hand. The entire study is hereby divided into to four main stages (1) requirement gathering, (2) prototype development, (3) prototype implementation and (4) usability testing. Questionnaire has been used as a usability technique for purpose of evaluating the system in terms of usefulness and easiness. The evaluation reveals that 72.6% of the participants indicated that the prototype usefulness which is high and agreed altitude.

Dedication

*This thesis is dedicated to
my beloved parents, Wife and family
Thanks for all the encouragement and support*

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By the Name of Allah, the Beneficent and Merciful

First and foremost, thanks to Allah (SAW), I would like to thank my supervisor Dr. Abdul Jaleel KehindeShittu without his knowledge and assistance this study would not have been successful. I am thankful also to my evaluator Professor. Md. Zahir Mat Cha.

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Thank you UUM

TABLE OF CONTENT

PERMISSION OF USE	I
ABSTRACT.....	II
DEDICATION	III
ACKNOWLEDGEMENT	IV
TABLE OF CONTENT	V
LIST OF TABLES	VII
LIST OF FIGURES	VIII
CHAPTER ONE	1
INTRODUCTION	1
1.2. Problem Statement	2
1.3 Research Questions	3
1.3 Objectibve Of the Study.....	3
1.4 The scope of the Study	3
1.5 Significance of the Study	4
1.6 Organization of the Report.....	4
CHAPTER TWO	5
LITERATURE REVIEW	5
2.1 Introduction.....	5
2.2 Rural Development and ICT	5
2.3 Telecenter.....	7
2.3.1 Kg Tradisi Lembah Keriang Telecenter (TC)	9
2.5 Web Based Training	10
2.5 Web Technology Development	13
CHAPTER THREE	16
RESEARCH METHODOLOGY	16
3.1 Introduction.....	16
3.2 Awareness of the problem.....	17
3.3 suggestion	18
3.4 Prototype Development	19

3.5 Evaluation	20
3.6 Conclusion	20
CHAPTER FOUR.....	21
SYSTEM ANALYSIS AND DESIGN	21
4.1 System Requirement	21
4.1.1 Functional Requirement.....	21
4.1.2 Non-Functional Requirement.....	24
4.2 Use Case.....	25
4.3Use Case Specification	28
4.4Activity Diagram	40
4.5Sequence and Collaboration Diagram.....	43
4.6Class diagram.....	46
4.7System Interface.....	56
4.8 Summary	64
CHAPTER FIVE	65
DATA ANALYSIS AND EVALUATION	65
5.1 Introduction.....	65
5.2 Functionality Evaluation and Analysis	65
5.3 Questionnaire	66
5.3.1 First Section: Demographic Data.....	67
5.3.2 Second Section: System Evaluation.....	70
5.3.2.1 Usefulness Evaluation	70
5.3.2.1 Ease of Use Evaluation	71
5.4 Summary	72
CHAPTER SIX.....	74
CONCLUSIONS &FUTURE WORK.....	74
6.1 Introduction.....	74
6.2 Discussion.....	74
6.3 Contribution of the study	75
6.4 Limitations	75
6.5Future Work.....	76
References.....	77
APPENDIX	81

LIST OF TABLES

Table 4.1: Functional Requirements	22
Table 4.2: Non Functional requirements	24
Table 5.1: Demographic Data Summary	69
Table 5.2: Usefulness Descriptive statistics	70
Table 5.3: Easiness of use Descriptive statistics	71

LIST OF FIGURES

Figure 3.1: Research Design Methodology	16
Figure 4.1: TYS Use Case Diagram	27
Figure 4.2: Descriptions the Activity Diagram For Manager	41
Figure 4.3: Descriptions the Activity Diagram For Member	42
Figure 4.4: Login Sequence Diagram	44
Figure 4.5: Register Sequence Diagram	45
Figure 4.6: Manage Program Sequence Diagram	46
Figure 4.7: Edit profile Sequence Diagram	47
Figure 4.8: Add Program Sequence Diagram	48
Figure 4.9: Upload Gallery Sequence Diagram	49
Figure 4.10: Delete Program Sequence Diagram	50
Figure 4.11: Send Notification Sequence Diagram	51
Figure 4.12: eServices Sequence Diagram	52
Figure 4.13: Log Out Sequence Diagram	53
Figure 4.14: Class Diagram for TYS	55
Figure 4.15: Homepage and login interface for TYS	56
Figure 4.16: Gallery interface for TYS	57
Figure 4.17: e-services interface for TYS	58
Figure 4.18: ManageProgram interface for TYS	59
Figure 4.19: Edit profile interface for TYS	60
Figure 4.20: Upload gallery Interface for TYS	61
Figure 4.21: Add Program Interface for TYS	62
Figure 4.22: Delete Program Interface for TYS	63

Figure 4.23: Edit Profile for manager Interface for TYS	64
Figure 5.1: Gender	67
Figure 5.2: Age	68
Figure 5.3: Evaluation result	72

CHAPTER ONE

1.1 INTRODUCTION

The Internet opens up opportunities for networking and access to information and services previously unavailable to low income people on account of distance and cost. Voice over the Internet Protocol (VoIP) is gaining importance, even if there are still institutional obstacles and latency limitations. The Net may also be used in combination with traditional technologies, like radio, to broadcast information over a wide area at low cost. The dominance of the Internet through computers as the standard Telecenter equipment, service configuration may change as technologies converge, but access to the Net is the standard feature of today's Telecenter (Minges and Kelly 2001).

Telecenters have aroused the interest of the international community as a means of implementing a fair rural development strategy that is in accord with the resource-poor situation of developing countries and marginal areas (Francisco et al. 2001). Meanwhile, a successful Telecenter experience requires familiarity with computers. This is not an insurmountable barrier as children and young people adapt to the technology more rapidly than mature adults. This is important both from a market and a development perspective. Countries with young populations have potentially large markets for Telecenters. Therefore, the use of Telecenters to introduce the technology

to young adults and children for educational and productive purposes makes social and economic sense, because they have a longer horizon in which to make productive use of this skill (Bihari Gabor and Charles Jokay, 1999).

1.2 PROBLEM STATEMENT

Mass media channels are relatively important at the knowledge stage, while interpersonal communication channels are in the persuasion stage in the innovation decision-process (Rogers, 2003). Strategies to increase ICT access to all must run along different timeliness and be harmonized with other efforts. Infrastructure development especially fixed line and electricity are important factors that can limit the effective supply of Broadband (Parkinson, 2005).

Countries without adequate Broadband infrastructure and without local expertise in ICT will find it very difficult to remain competitive in the world market (Falch and Anyimadu, 2003). The lack of infrastructure (e.g., electricity, telephone connections and hardware) is still the major challenge for introducing ICT into disadvantaged areas. An initiative such as Telecenters becomes important, because, the purposes of Telecenters are to bridge the digital divide by reaching those who otherwise would be unlikely to access ICT and other services (Parkinson, 2005).

The purpose of communication is to inform, to persuade and to entertain, through many of the messages communicated by the mass media. Thus, the mass media

through its advertising expertise and capacity; it promotes buying and selling, and also supports a healthy economy (Beckert, 1982).

Libyan government has shown great interest in the development of rural areas through the increment in the budget allocation on telecommunication. From the year 2000 until 2010, the budget allocation of Libyan governments keeps increasing by millions of Dinar (Libya local currency) on ICT (libyanonline.org).

Despite the cost and effort that Libyan government earmarks on ICT, there has not been a significance influence on the living style of Libyan when comparing their Gross domestic product(GDP) with Malaysian GDP. As at 2005, the GDP per capital income of Libya remains \$1,849 US Dollars (libyaonline.com), while Malaysia GDP was \$4,480 US Dollars (tradingeconomics.com). Thus training should be carried out for different target groups in order to provide opportunities for the people to improve their economic status through increased competencies delivered by different training programmes. One of the first efforts to improve the delivery of training programmes is to manage the training programme according to the number of people who can be trained. According to the interview with the manager of Telecenter(ITU-UUM, 2011), users want to get more information about the Telecenter training programme. Besides that, they also want to register for their prefer programs such as education, agricultural and health programs. Thus, this study proposes a training management system to help organize various training programmes for the people of Yevern region in Libya.

1.3 RESEARCH QUESTIONS

The research will be achieved by answering the following questions:

- i. What are the requirements to develop the training management system for YevernTelecenters?
- ii. How to evaluate the training management system for YevernTelecenters?

1.4 OBJECTIVE OF THE STUDY

The primary objective of this study is to develop a training management system for the YevernTelecenters to provide appropriate information for the citizens of Yevern in Libya. Apart from the primary objective, this study decomposed into the following objectives:

- i. To identify the requirements for the training management for the Telecenter in Yevern.
- ii. To develop and evaluate the functionality of the proposed prototype.

1.5 SCOPE OF THE STUDY

This study on design of the requirement model for Yevern region, Libya will start with the literature, and visit the Telecenter under the International Telecommunication Union (ITU) UUM in order to get the requirements for the training management programme for the Telecenter for Yevern region in Libya. For the

completion of the project, the system needs to be subjected to testing by the end users (Nielson &Tahir, 2001).

1.6 SIGNIFICANCE OF THE STUDY

The significance of this study is to come out with a systemfor training management programmeof the Telecenter in Yevern region in Libya to bridge the digital divide. The Telecenter will be able to bridge the digital divides for the various people who will be trained accordingly to get jobs or carry out economic activities over the Internet or the traditional face to face means.Moreover, will help telecenter staff to manage programme easily at anytime and anywhere.

1.7 Organization of the Report

This report is organized in six chapters. In the first chapter, the project, its problem, purpose and objectives are all introduced and defined. The second chapter discusses the literature review with a thorough description of the different aspects relating to the field of study. The third chapter covers the methodological approaches adopted in the research. The fourth chapter includes scheme design, the analysis of the prototype. Further, the fifth chapter presents the analysis of the data collected and a detailed discussion on the findings of the study. Finally, the conclusions and recommendations for future research are stated in the sixth chapter. At the end of the report, the references used in the study as well as the appendixes have been included.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

A background and a brief description of the study settings were introduced in the previous chapter. The purpose of this chapter is to review the past and current literature to uncover previous research that can be applied in the context of this project. This will take the form of reviewing projects outcomes, research studies and any other literature deemed to be used. The objective of the review is to uncover specific information that will be of assistance in the later application development phase.

2.2 Rural Development and ICT

Victor and Nazaruddin (1992) describe rural development, more than a mere concept is a series of experiments in alternative methods of organizing production, welfare and social life in the rural areas. The history of Malaysia's rural development has been multi-faceted and varied, particularly since 1970, there have generally been clear and coherent Malaysian government objects as well as significant degree of continuity and consistency in the implementation of the programmes. The early agricultural

policies, for example, were mainly directed towards promoting economic growth and sectoral development.

Rural communities also need to develop their life standard. Gsanger (1994) stated several general conclusions about the efforts to achieve sustainable rural development. First, economic growth is essential, but not enough on its own to limit rural poverty effectively. There are structural and institutional constraints such as appropriate agricultural technologies for typical small farms are available in only fragmentary form and as rural-urban links are rudimentary, the opportunities for very small farmers and the landless to earn incomes from non-agricultural activities are limited. Second, satisfactory social development of the rural community identifies for sufficient scope in policy and society to permit and promote self-organization, self-initiative and self-help. The limited degree of social security and the absence of basic social services are among the main causes of mass poverty, the blocking of man's creative forces and high birth rate.

To develop rural area, people in that area must be able to change. When these people change the way they use their resources - land, water, plants and animals - they are able to alter their social relationships as well (Gabriel, 1991). However, the successful of rural area development depends on the community to adapt with new technology.

According to UNESCO (2005) that in the year 2000, 3,16 billion people (52.8%) worldwide live in rural areas, and it is expected that 3,338 million people will still be living in rural areas by the year 2015. Approximately 75% of them are poor, involved in farming activities and living in rural areas; 60% are expected to do so in 2020 and 50% in 2035. Although the number of people living in rural area is expected to drop, however the core problems in these areas remain the same. Almost all of the rural areas suffer from the lack of information because of many reasons such as the location, poor life, and low education level. Thus, it is become more important to provide information to these rural communities as this will enhance their lives.

Currently, with the advances in Information and Communication Technologies (ICTs), the exchange and sharing of information has become much cheaper, faster, and easier than ever before. Taking advantage of these advances in ICTs, many governments, independent sectors, the private sector, research institutions and others aim to make relevant information available and accessible in the form and the time required for sustainable development in community at the rural areas.

2.3 Telecenter

Telecenter is a place where communities can get an access to the internet and using the ICT's related equipment's which allowed them to communicate with other people, gathering information and develop their essential digital skills. Usually the telecenter are focusing on the rural areas because most of the time, people in rural areas still lack

about the ICT's knowledge. So Telecenter being used as tools in order to narrowing the gap between the rural and urban communities about ICT. According to Jensen and Esterhuysen (2011) people living in developing countries are becoming increasingly aware of the powerful role that new information and communication technologies can play to help them in their struggle for education, democracy, and economic and social development. However, with six billion people on the planet and only about 800 million telephone lines, more than half of the world's population have not yet made a telephone call, let alone accessed the Internet (Jensen & Esterhuysen, 2011). If this digital divide is not closed, there could be an even greater gap between the rich and poor of the world. So to solve this there is one solution which is to public access communication and information services, which commonly known as Telecentres.

Various studies have been conducted to investigate the development of the rural area through Telecenters. The main ideas about developing these Telecenters are about bridging digital divide.

According to Sonia (2000), Technological developments, such as radio transmission or fixed wireless, have become widely available and provide affordable solutions to rural telecommunications. Most importantly, community Telecenters provide a feasible alternative for rural telecommunications access. Indeed, telecommunications authorities should focus on developing policies that encourage rural development and

affordable access to ICTs in rural and peri-urban areas. A policy centered on Telecenters is the appropriate response in many developing countries.

Lutz (2000) studied six Telecenters (four libraries and two community centers) in East Austin, Texas, a low-income urban area. Many users of these public access centers were constrained by the thirty minute time limit imposed by the Telecenter staff. Therefore, Libraries are not physically designed to serve as Telecenters, nor are library staff trained or oriented to facilitate public access to the Internet.

The different training programmes required by the various target groups will need to be managed so as to ensure that the people can make full use of the training programmes provided by the Telecenter (Kwan et. al, 2000).

2.3.1 Kg TradisiLembahKeriangTelecenter (TC)

Telecentres have been established in many countries as a means of providing accessto information and communication technologies (ICTs) in order to enhancecommunity development (Arlene &Ojelanki, 2009).It is not easy to establish and maintain a good Telecenter, the factors lead to itssuccess includes autonomy and harmony, partnerships among stakeholders andcommunity participation (Arlene &Ojelanki, 2009).

The Kg TradisiLembahKeriangTelecenter implemented and managed by ITU-UUM.It is located in Kg TradisiLembahKeriang, a village near Changlun. It aims toimprove skill and knowledge of people in Kg TradisiLembahKeriang. Whenresidents in Kg TradisiLembahKeriang have needs for the training in specificontent such as

accounting, finance, banking, instructors will be brought to this TC from UUM (ITU-UUM, 2011).

The location of this TC is due to the supportive residents, sufficient facilities and it is near the Mesaqud where people always come. ITU-UUM build the TC with collaboration with local community, since the building of the TC is requested by Malaysia Communication and Multimedia Commission which in charge of ICT penetration and awareness in the country, the local community give a building free to build this TC. The TC is fully operated in 2009. It has space for meeting section, 8 PC, table and chairs. There are two staffers right now; one is manager while the other is assistant manager. The TC has only one ICT training so far, but other trainings such as finance, counting, e-application are planning now. At the same time, it also makes plans for small and medial industry training (ITU-UUM, 2011).

2.4 Web-Based Training

Web-based training is a form of interactive computer-based training that is accessed with a browser and uses the Internet or a company's own intranet as delivery channels. Web-based training falls under the bigger umbrella entitled Technology-based training and is often referred to as on-line learning, electronic learning or e-Learning. Technology-based training is an all-inclusive term for training delivered by a number of means. In the past, these have included the use of mainframe computers, floppy diskettes, Multimedia CD-ROMs and interactive videodisks. Most recently,

Internet and Intranet delivery have become preferred delivery options (Kruse & Keil, 2000).

Driscoll and Thomson (1997) said that there are two reasons to adopt Web-Based Training, one is an organizational and the other is educational. Organizations adopt Web-based training for economic reasons; these are often the most compelling because of savings. They include:

- Reduction of training related travel costs.
- Decrease in production and distribution costs for training materials.
- Increased use of network infrastructure.

The educational reasons for adopting Web-based training are equally important, even if they produce less tangible results. Compared to conventional classroom training, Web-based training offers three unique features: Continuous learning, Just-in-time learning, and Collaborative learning.

Web computer-based training is very much like training with a program loaded on the hard drive or a CD-ROM. The user interacts with only one specific program located on the Internet and does not interact with other students or instructors. The advantage of Web computer-based training is ease of access to the program no matter where the student is located. There is no need to physically possess the program or CD (Blake et al., 2003).

Minotti and Giguere (2003) find five major benefits of web-based training as are listed:

- Flexibility: The training can occur at anytime and anywhere that there is Internet access. Individuals can learn at their own place and work around their own time schedule.
- Cost- Web-based training is less expensive and eliminates travel and facilities fees. Updates and edits can be made easily and quickly and distributed Worldwide.
- Learning and understanding- Individuals may feel more in control of their own learning. Web-based training lends itself to be more interactive in nature and allows for engaging multimedia components such as graphics, video, and audio to be incorporated in to it.
- Cross-platform and varied software- The training may be accessed on several computer platforms, including Windows and Macintosh. The training can also be accessed using many of the common Web browsers, including Internet Explorer and Netscape Navigator.
- Accessibility- Web-based training is standardized in nature and equalizes the delivery of the materials for all individuals. It is available at anytime and at any location with an Internet access.

2.5 Web Technology Development

The World Wide Web has grown as a unique space and has become one of our major channels of information and communication (Serrano et al., 2007; Weinreich et al., 2008). The Web provides a wealth of information to an incredibly diverse user population and designers face the constant challenge of developing Web-based applications that need to meet diverse user needs (Shneiderman, 2000).

With the rapid development of service computing technology (Ruffo, *et al*, 2004), Web Application Development (WAD) is getting rid of heavy programming labor and replacing it with resource aggregation to reuse available services on the Internet (Taguchi, *et al*, 2003). Thus, designing and programming phases will no longer account for a big ratio in software development lifecycle (Zhang, 2008).

Since the advent of the Internet and World Wide Web (WWW) in the early 1990's, many organizations have developed their own web applications by integrating WWW and their existing business logics (Wei, et al, 2008). Due to two strong benefits of web, "any time anywhere," the size and the number of web applications have been very rapidly increased. However, the maintenance of a web application is getting difficult due to the inherent complexity of the system (Chung & Yun, 2003).

In addition, Web application is any software application which needs the Web to execute correctly; however, there are software designed specifically for Web delivery like Web-based journals (Gellersen et al., 1999). It usually consists of static resource

files (e.g. Images), libraries, helper classes and web components. A web browser is commonly used as a slim client therefore all the processing executed on the server. Web applications are typically organized in three-level architecture which are; a user interface level, a functional process logic level, and data storage level. The user-interface level represented by web browser, and the functional level represented by the dynamic web content technology such as CGI, ASP or Java. Data Storage is handled by a database. Web applications are an extension of a web server (Armstrong et al., 2005).

Web Services combine the best aspects of component-based development and the Web Link component. Web Services represent black-box functionality that can be reused without worrying about how the service is implemented. Unlike current component technologies, Web Service is not accessed via object-model-specific protocols, such as Distributed Component Object Model (DCOM), The Java Remote Method Invocation (RMI), or Internet Inter-Orb Protocol (IIOP). Instead, Web Service are accessed via ubiquitous Web protocols (ex: HTTP) and data formats (ex: XML) (Watanapitayakul, 2001).

Developing web-based application offers opportunity to maximize time in terms of interaction since access is universal as long as there is internet access. The source also revealed that it offers more functionality for the developed system. It was gathered that attitudes play a long role in the development of web-based application. Among

web-based applications that consider attitude in the development process include E-Commerce Shopping Cart Setup, installation and customization, electronic hardware integration, website hardware integration, website statistics software, personalization of web page content, dynamic creation of images and graphs, SMS messaging integration, online product database development, ecommerce application development, customer relationship management, online data collection and analysis, online customer support software, web content management software, secure client areas, email automation and the like (WAD).

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

To achieve the objectives of this study, past studies on the field of research will be reviewed in details to determine requirements in designing the training programmes for the Telecenter for Yevern region in Libya. The general ideal proposed by Vaishnavi and Kuechler (2004) as shown in Figure 1 will be used as a guideline to build a design research. In this general method, design research involves five steps which begin from awareness of the problem, then suggestion, followed by development, evaluation, and finally conclusion.

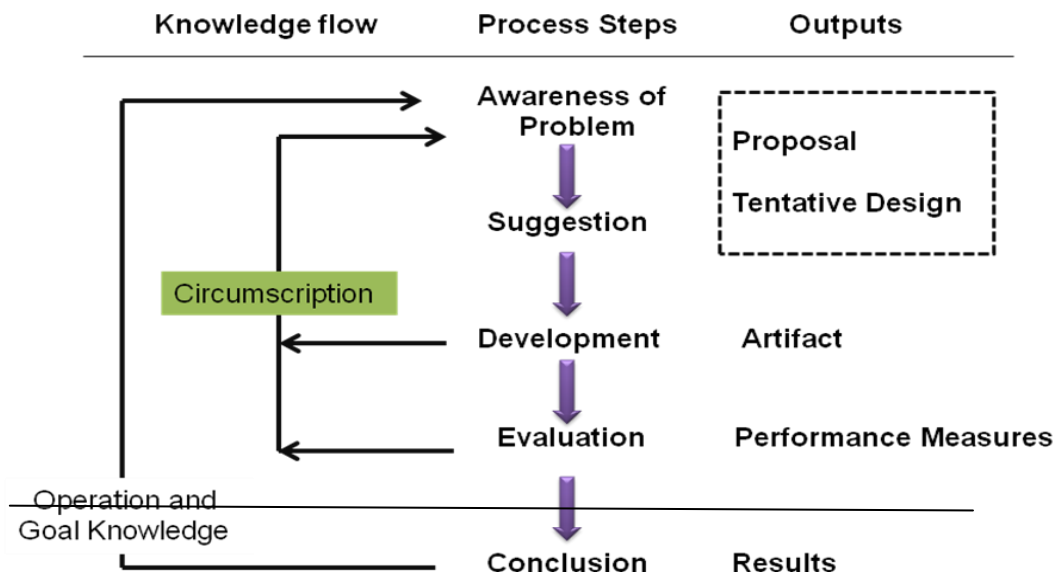


Figure 1: Research Design Methodology (Vaishnavi&Kuechler, 2004).

3.2 Awareness of the Problem

This phase was in the beginning of the project. First, a topic of the project was determined and understood. The project objectives of development was analyzed and defined based on the statement of the problem. In addition to that, the project's scope was identified to draw the project boundary. The problem has been understood before looking for an applicable solution. the first and foremost step is by comprehending the effect of not having a Telecenter at Yevern region in Libya, how the absent of Telecenter is causing backwardness in the economy growth of Yevern region in Libya, and the requirements that are needed in designing the Telecenter and the development of the Telecenter training management prototype. Also, understanding the objectives and the scope of the study are equally important. Based on Hoffer et al. (2002), information's gathering phase of could be done via direct interview. Furthermore, literature survey from the suitable and available sources like a books, journals, proceedings, papers, journal reports and news are reviewed in order to gather literatures and drawn on the related information. The information about the design of Telecenter for Yevern region in Libya has been gathered by using interview technique to get the needed requirements and documentation. In general, the interview process followed Rubin (2004) which consists of five basic steps: Selecting interviewees, designing interview questions, preparing for the interview, conducting the interview, and follow- up.

In this research, the manager of the telecentre is selected to be the interviewee as the manager who manages the telecenter, interview questions are about the operation information of the telecentre of ITU-UUM, its target users, its requirements of the Telecenter training management prototype and how they work without a web-based management system. Based on the information collected from the interview, it is found that now the staff in the telecentre is facing difficulties without the web-based training management prototype for the telecentre, they need to go to the telecentre in most cases to get very simple information and details about the available training programs. It is found that a web-based telecenter training management prototype is in a strong demand by them to manage the telecentre in a more effective way by saving the time, effort and money.

3.3 Suggestion

This study is aimed at suggesting the design of a Telecenter training programs management system for Yevern region in Libya. This will bridge the digital divides and facilitate improvement of service delivery at Yevern region in Libya. To achieve this, the proposed prototype has been developed to explain the feasibility of such telecenter in reality. In this phase, the designing process took place to give more details about the design of the prototype to provide managers of ITU-UUM with the useful information, which depends on the requirement processes and the components of the system like the application platform, database, and application programming

interface (API). In this phase also designing and analyzing for the proposed prototype took place to come out with the use case diagrams, activity diagrams, sequence diagrams, and class diagram where these diagrams represent the output of this stage as well as these diagrams will be built by using unified modeling language (UML). We expect from analysis and design process to make development process easier and efficient because the analysis and design processes will help us to understand the basic behaviors and events that could be happened over telecenter training management prototype.

3.4 Prototype Development

The Tentative Design for telecenter training management prototype has been implemented in this phase. The process of implementing the techniques is differs from system to another system depending on the artifact to be constructed. On this project, a step by step architectural approach has been followed in building the prototype of telecenter training management system that improves and enhances the usability issues, has to be chosen as the development environment. Furthermore, the output of analysis and design processes (diagrams) has been translated into object oriented programming. We are interested to use these objects in order to develop telecenter training management prototype. The prototype developed using visual basic .Net (C#) programming language as front end and Microsoft Access 2010 database as backend.

The output of this phase represented the telecenter training management prototype with the whole system functions where telecenter training management prototype should be performed these functions perfectly where the problem of this study should be solved at the end of this phase.

3.5 Evaluation

After the development of the proposed prototype, this phase focused on the users' opinion evaluation and analysis in determining the success of designing Jeverntelecentertraining management system. This stage is usually referred to as the study feedback from the selected users, basically for the researcher to identify the weaknesses and the strength of the developed application. This stage carried out by distributing 15 questionnaires to measure the usability of the Yeverntelecenter system through the usability test method. The gathered data has been analyzed by statistical instrument of analysis (SPSS). Details of the evaluation carried out in this project are discussed in Chapter five.

3.6 Conclusion

The completion of this study will provide a solution to the problem of digital divides facing the telecenter of Yevern region in Libya.

CHAPTER FOUR

SYSTEM ANALYSIS AND DESIGN

This chapter briefly discusses to a proposed telecenter training management system at Yevern region in Libya. The results of this chapter are determined the requirements of assessment system and analysis the system using UML language to understand how the system works through models using use case diagram, class diagram, sequence and collaboration diagram. Finally, build the interface for telecenter training management system.

4.1 SYSTEM REQUIREMENTS

4.1.1 Functional Requirements

Functional requirements capture the intended behavior of the system. This behavior may be expressed as services, tasks or functions the system is required to perform. The system consists of two users (Manager & Member). The users will interact with the system through interfaces as well as the requirements appear when it is the base on the user's interface. Table 4.1 summarizes the functional requirements for the system and gives a brief description of the different requirements.

Table 4.1: System Functional Requirement

No.	Requirement ID	Requirement Description	Priority
	TYS_01	Homepage	
1.	TYS_01_01	The users (Manager & Member) can put the link in address and see the home page.	M
	TYS_02	Login	
2.	TYS_02_01	To authenticate user (the user must enter validate his/her user name and password).	M
3.	TYS_03_02	To inform invalid password and user name.	D
	TYS_03	Registration	
4.	TYS_03_01	The user (Member) can create new account include information about the user and password.	D
	TYS_04	Manage program	
5.	TYS_04_01	Member can view all the program was taken and any details about the courses.	M
6.	TYS_04_02	Member can register the available program.	M
7.	TYS_04_03	Member can download the entire file (pdf, ppt, doc, etc.), for courses he/she taken.	O
	TYS_05	Edit Profile	
8.	TYS_05_01	The users (Manager & Member) can	M

		change information for his/her account.	
	TYS_06	Add Program	
9.	TYS_06_01	Manager can add new course with the deities about the courses.	M
	TYS_07	Upload Gallery	
10.	TYS_07_01	Manager can upload any photo for the telesenter through the system.	M
	TYS_08	Delete Program	
11.	TYS_08_01	Manager can remove the program which is a sufficient participants.	M
	TYS_09	Send Notification	
12.	TYS_09_01	Manager can send notification to the member about any information he/she needs to inform.	M
	TYS_10	eService	
13.	TYS_10_01	User (Manager & Member) can enter to eService to select the website link for any service he/she needs such as (ePayment, eFailing, Check Suit RTD, etc.)	O
	TYS_11	Logout	
14.	TYS_11_01	The user make log out of the system	O

4.1.2 Non Functional Requirements

The non-functional requirements will capture properties of the system that has to do with performance, quality or features that are not fundamental for the system to work. However, it is very important because they are often properties that highly desired by the user and can help the system gain competitive advantage over other systems. Table 4.2 summarizes the non-functional requirements for the system.

Table 4.1 List of Non-Functional Requirements

No.	Requirement ID	Requirement Description	Priority
	TYS_12	Usability issues	
15.	TYS_12_01	The system must provide the easy access.	M
16.	TYS_12_02	The system must be easy to deal with.	M
	TYS_13	Operational requirements	
17.	TYS_13_01	The system will have server for the database and connection to the main database.	M
18.	TYS_13_02	The system will work over the web environment with all web browsers.	M
19.	TYS_13_03	The system must be current with evolving web standard.	M
	TYS_14	Performance requirement	

20.	TYS_14_01	The system database must be updated in real time.	M
21.	TYS_14_02	The system must have reasonable speed according to technology use to access many of users at the same time.	M
22.	TYS_14_03	The system should be available 24x7.	M
	TYS_15	Security requirements	
23.	TYS_15_01	Only the person who has user name and password can access the system.	M
24.	TYS_15_02	Unauthorized person should not use the system, just view the main page.	M
25.	TYS_15_03	No one can change the password without login to the system.	M

4.2 USE CASE

A use case is initiated by a user with a particular goal in mind, and completes successfully when that goal is satisfied. It describes the sequence of interactions between actors and the system necessary to deliver the service that satisfies the goal. Generally, use case steps are written in an easy-to-understand structured narrative using the vocabulary of the domain. This is engaging for users who can easily follow

and validate the use cases, and the accessibility encourages users to be actively involved in defining the requirements.

According to the use case diagram, the system has two main components (actor/use case). In this study an actor represented by manager and member. The manager has to login to the system using his/her or her user name and password. The manager can manage the programming courses (Add, Edit, upload and Delete) in telesenter training management system. The member can view the program he/she had taken and make download to the material for courses. The use case it represented in the following Figure 4.1.

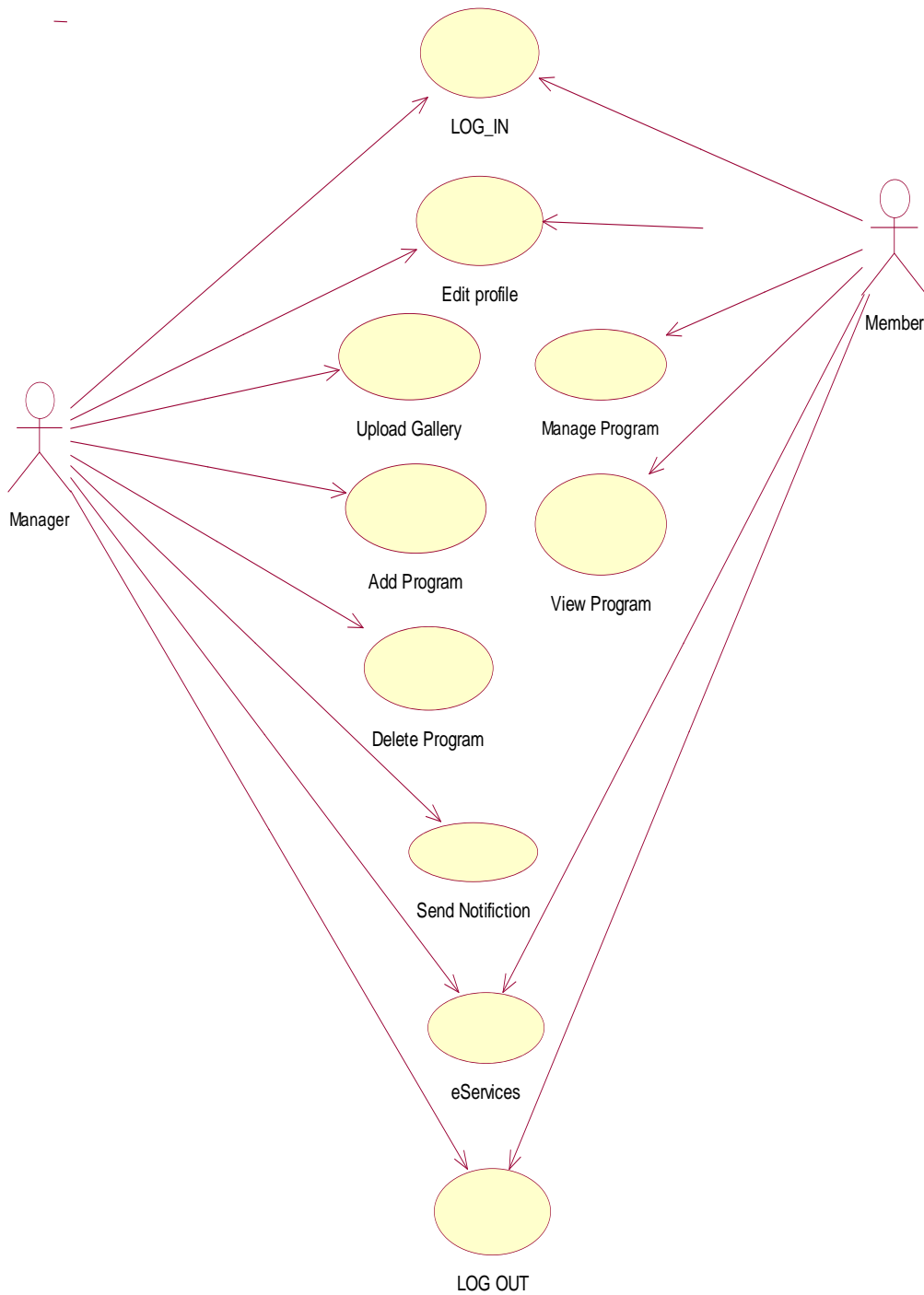
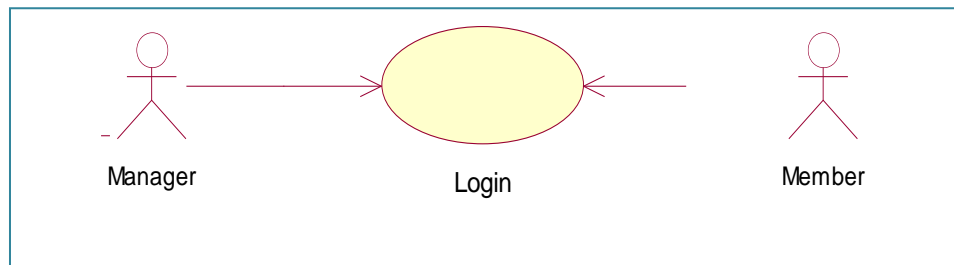


Figure 4.TYS Use Case Diagram

4.3 Use Case Specification

1- Log in use case (TYS_01)



1.1 Brief description

Log in use case is initiated by the actor (manager/member). This use case will enable the user to login through the use of username and password to his/her page.

1.2 Pre-Conditions

- The actor (manager/member) must specify his/her category.
- The actor inserts username and password.

1.3 Characteristic of Activation

Log in use case depends on manager and/or member.

1.4 Flow of Events

I. Basic Flow

- This use case begins when the manager / member press Log in button.
- The system will display different pages according to the actor category (manager/member).

II. Alternative Flow

Not Applicable.

III. Exceptional Flow

E1: Invalid Password/Username: The system will display the error message if the manager / member write an invalid username/password.

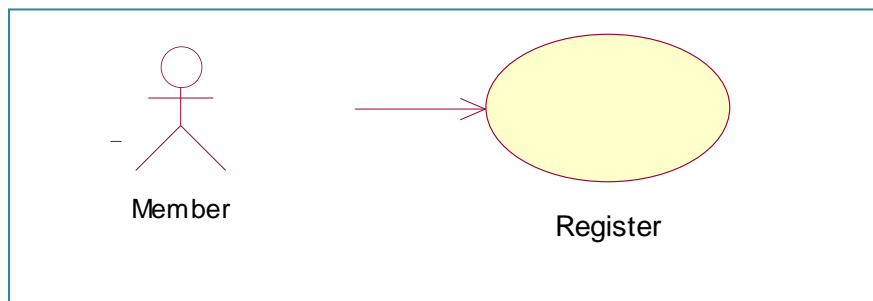
1.5 Post-Conditions

Not Applicable.

1.6 Rule(s)

Not Applicable.

2- Register Use Case (TYS_02)



2.1 Brief Description

Register use case is initiated by the member. This use case will enable member to create an account.

2.2 Pre-Conditions

Not Applicable.

2.3 Characteristic of Activation

This use case (Register) depends on member.

2.4 Flow of Events

I. Basic Flow

- This use case begins when the user press Register Button.
- The system will display Register page for member.
- The member will fill the entire field, and then press submit button.
- The system will display successful message.

II. Alternative Flow

Not Applicable.

III. Exceptional Flow

E2: Display message error if the user left some fields empty.

IV. Post-Conditions

Not Applicable

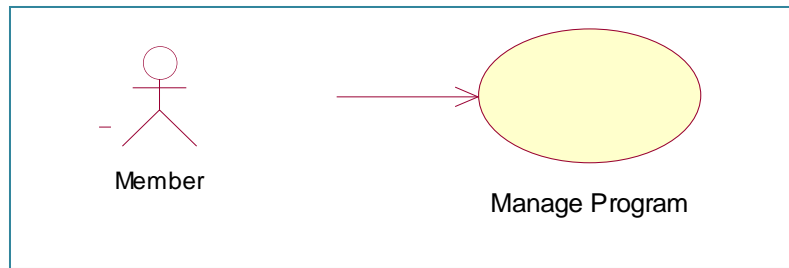
2.5 Rule(S)

Not Applicable.

2.6 Constraint(S)

Not Applicable

3-Manage Program Use case (TYS_03)



3.1 Brief Description

This use case is initiated by the member. This use case will enable the member to manage the courses.

3.2 Pre-Conditions

- The member must log into system.

3.3 Characteristic of Activation

This use case (View program) depends on member.

3.4 Flow of Events

I. Basic Flow

- This use case begins when the user press program link in his/her page.
- The system will display all the courses and the courses which member taken.
- The member can manage the program by select a new courses to register then press register now button or select the material, and then press download material button .
- System will display successful message.

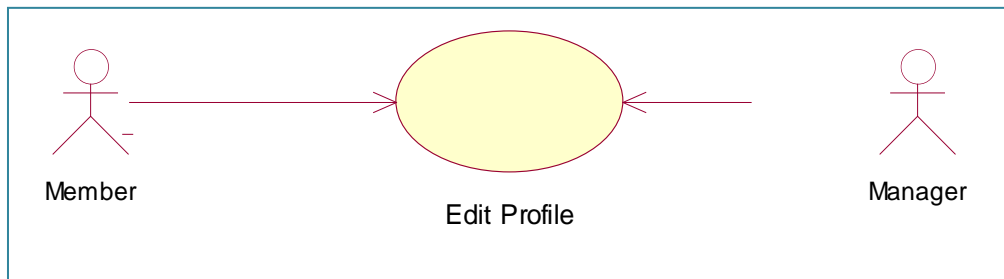
II. Alternative Flow

- Not Applicable.

III. Exceptional Flow

Not Applicable

4–Edit Profile Use case (TYS_04)



4.1 Brief Description

The use case is initiated by the actor (manager/member). This use case will enable the user to modify his/her account information.

4.2 Pre-Conditions

- The member must log into system.

4.3 Characteristic of Activation

This use case (edit profile) depends on member.

4.4 Flow of Events

I. Basic Flow

- This use case begins when the user (manager/member) press edit profile page.

- The user will select the information which wants to change then press upload button.
- The system will display successful message.

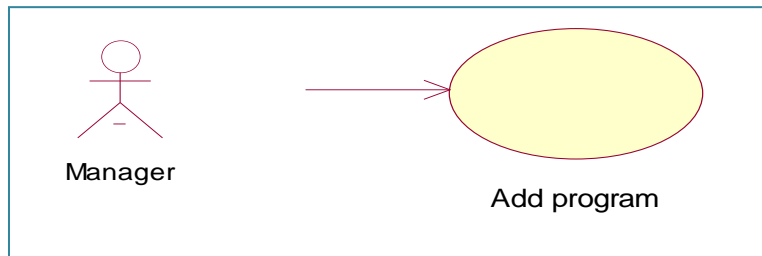
II. Alternative Flow

- Not Applicable.

III. Exceptional Flow

Not Applicable

5 -Add Program Use case (TYS_05)



5.1 Brief Description

This use case is initiated by the manager. This use case will enable the manager to add the courses in the telesenter system.

5.2 Pre-Conditions

- The manager must log into system.

5.3 Characteristic of Activation

This use case (add program) depends on manager.

5.4 Flow of Events

I. Basic Flow

- This use case begins when the user press add program link in his/her page.
- The system will display the add page.
- Manage will enter the information about the new program then press add button.
- System will display successful message to add the program.

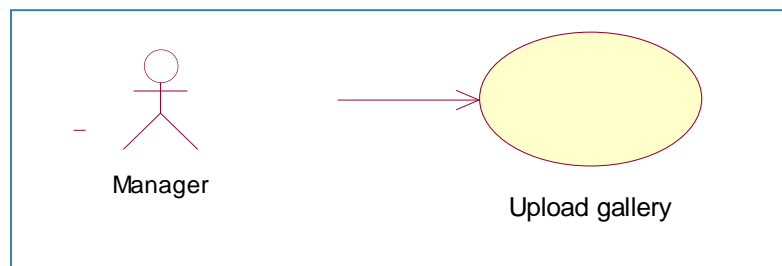
II. Alternative Flow

- Not Applicable.

III. Exceptional Flow

Not Applicable

6- Upload gallery Use case (TYS_06)



6.1 Brief Description

This use case is initiated by the manager. This use case will enable the manager to upload picture file to the system.

6.2 Pre-Conditions

- The manager must log into system.

6.3 Characteristic of Activation

This use case (upload gallery) depends on manager.

6.4 Flow of Events

I. Basic Flow

- This use case begins when the user press upload gallery link in his/her page.
- The system will display the upload page.
- Manager will press browse button to select the photo for upload
- Manager put the information about the photo then press upload button.
- System will display successful message to upload the photo.

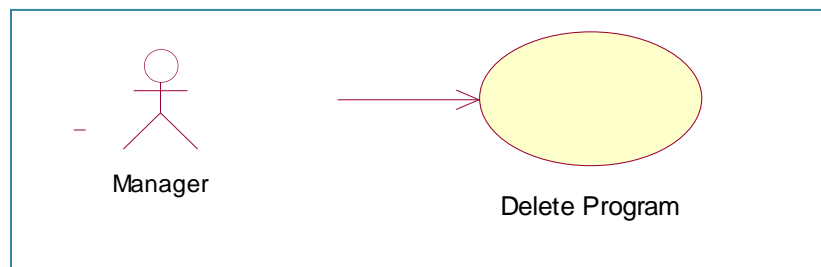
II. Alternative Flow

- Not Applicable.

III. Exceptional Flow

Not Applicable

7- Delete Program Use case (TYS_07)



7.1 Brief Description

This use case is initiated by the manager. This use case will enable the manager to delete the courses which added in the telesenter system.

7.2 Pre-Conditions

- The manager must log into system.

7.3 Characteristic of Activation

This use case (delete program) depends on manager.

7.4 Flow of Events

I. Basic Flow

- This use case begins when the user press delete program link in his/her page.
- The system will display the delete page.
- Manage will select the program which need to remove, and then press delete button.
- System will display successful message to remove the program.

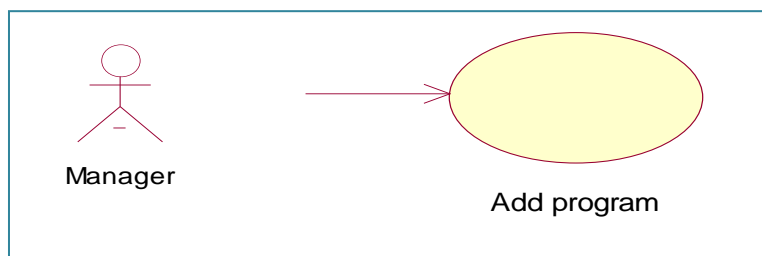
II. Alternative Flow

- Not Applicable.

III. Exceptional Flow

Not Applicable

8- Send NotificationUse case (TYS_08)



8.1 Brief Description

This use case is initiated by the manager. This use case will enable the manager to send notification to the member of telesenter system.

8.2 Pre-Conditions

- The manager must log into system.

8.3 Characteristic of Activation

This use case (send notification) depends on manager.

8.4 Flow of Events

I. Basic Flow

- This use case begins when the user press send notification link in his/her page.
- The system will display the send notification page.
- Manage will enter the notification which need to send to the member, and then press send button.
- System will display successful message for sent notification.

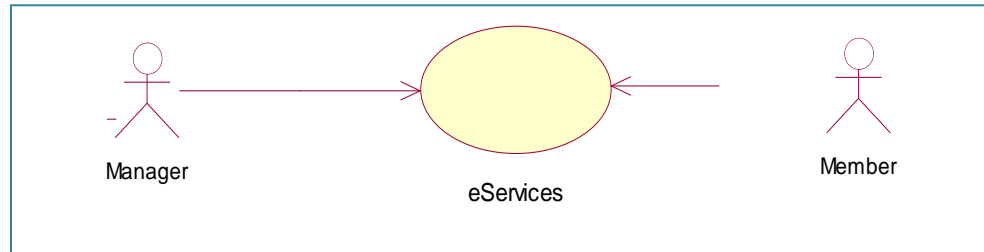
II. Alternative Flow

- Not Applicable.

III. Exceptional Flow

Not Applicable

8- Send Notification Use case (TYS_08)



8.1 Brief Description

The use case is initiated by the actor (manager/member); this use case will enable the users to access another website.

8.2 Pre-Conditions

- The manager must log into system.

8.3 Characteristic of Activation

This use case (send notification) depends on manager.

8.4 Flow of Events

I. Basic Flow

- This use case begins when the user press eServices link in home page.
- The system will display the eServices page.
- The users can access to another services by press on the services' link.
- System will get the way to the other website.

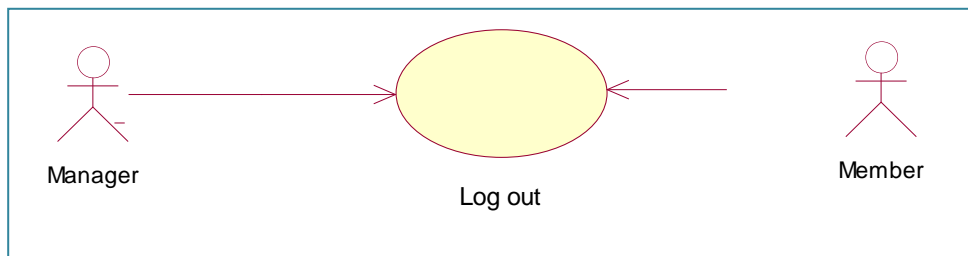
II. Alternative Flow

- Not Applicable.

III. Exceptional Flow

Not Applicable

9 - Logout Use case (CSS_09)



9.1 Brief Description

This use case starts when the actor (manager/member) wants to terminate a job or after finishing it and returns to main page (Home). When the actor uses this use case, the system will leave (manager/member) page and return to main page (Home) of the system.

9.2 Pre-Conditions

The user must be login to the system.

9.3 Characteristic of Activation

This use case (log out) depends on the actor (manager/member).

9.4 Flow of Events

I. Basic Flow

- The use case begins when the actor (manager/member) click on the Log out button.
- Then the system will close the actor(manager/member) current page.

- After that, the system is directed to Home page.

II. Alternative Flow

Not applicable.

III. Exceptional Flow

Not applicable.

9.5 Post-Conditions

Not applicable.

9.6 Rule(S)

Not applicable.

9.7 Constraint(S)

Not Applicable.

4.4 Activity Diagram

Activity diagrams represent the business and operational workflows of a system. An Activity diagram is a dynamic diagram that shows the activity and the event that causes the object to be in the particular state. Figure 4.2, 4.3 descriptions the activity diagram for admin and member.

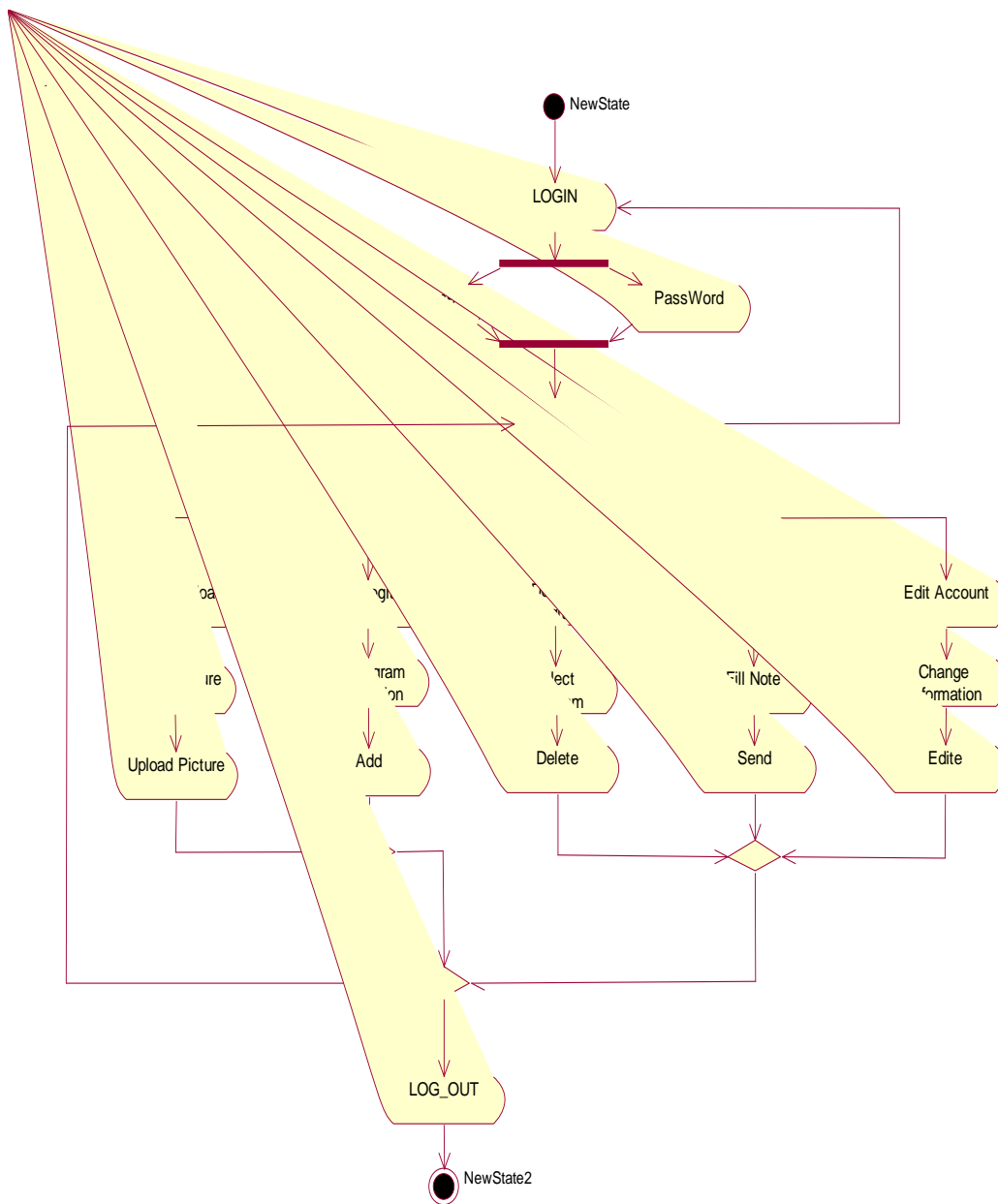


Figure 4.1 Descriptions the Activity Diagram For Manager

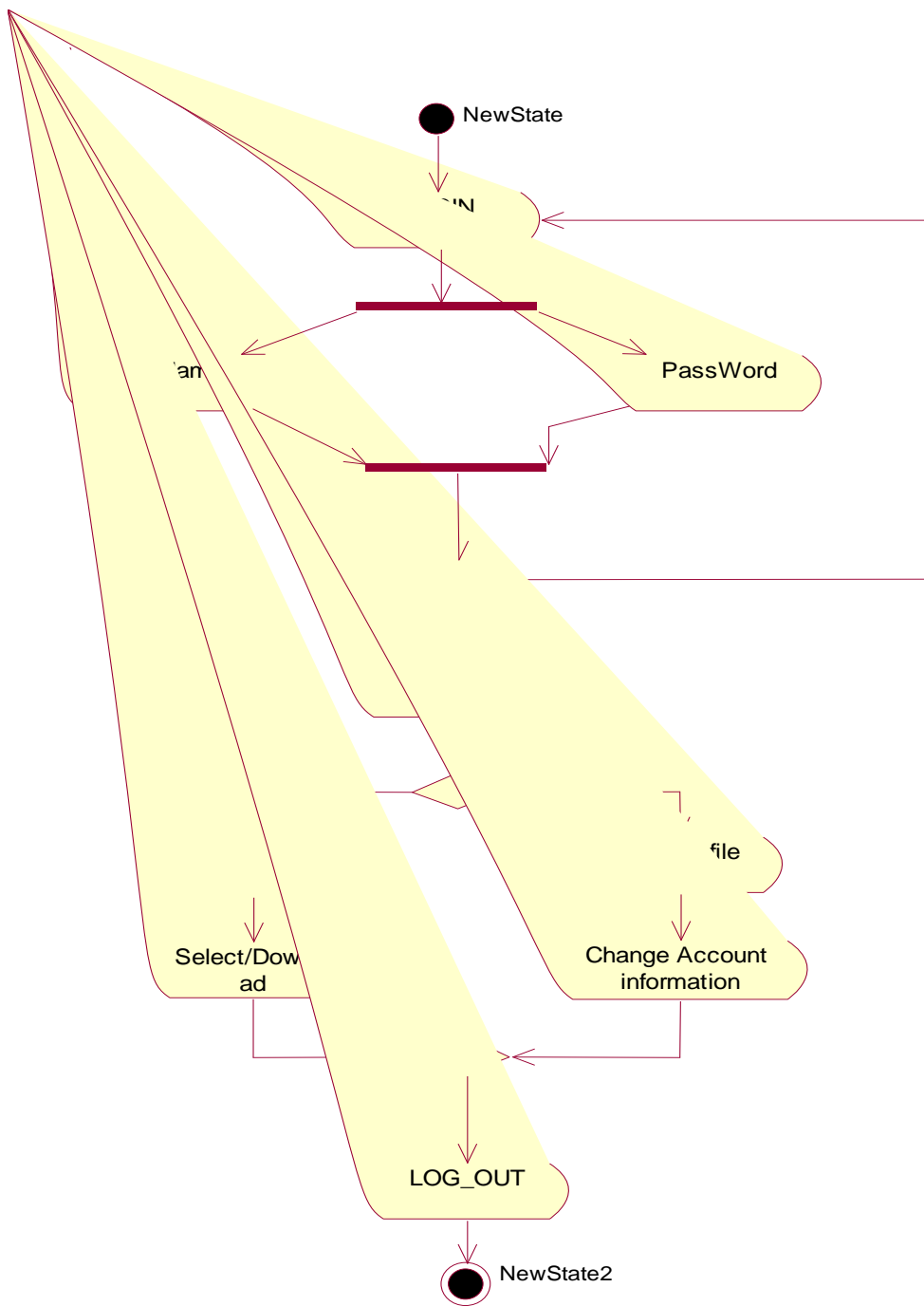


Figure 4.2 Descriptions the Activity Diagram For Member.

4.5 Sequence and Collaboration Diagram

The sequence diagram is a unified modeling language (UML) diagram that shows the processes that are executed in sequence (Lee, et al., 2010), the sequence of messages which are exchanged among roles that implement the behavior of the system, arranged in time. There are three kinds of objects:

- a) Boundary: it is the boundary between the user and the actors (interface).
- b) Entity: it's the information a system uses (data).
- c) Control: it's the control logic of the system (who does what).

Login

As shown in figure 4.5 it describes the sequence diagram for system login. Users (Manager and Member) can access a system by logging in his/her or her account through the username and the password.

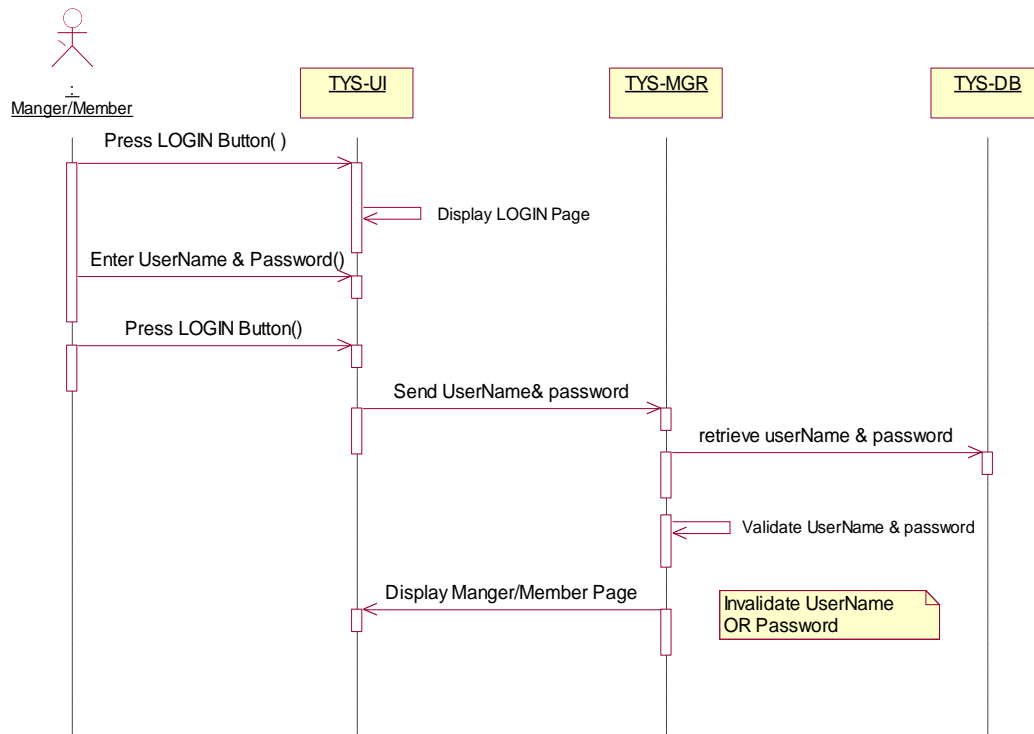


Figure 4. Login Sequence Diagram

Register

As illustrated in Figure 4.6 describe the sequence diagram for system register. The member can create account by fill information to make registration.

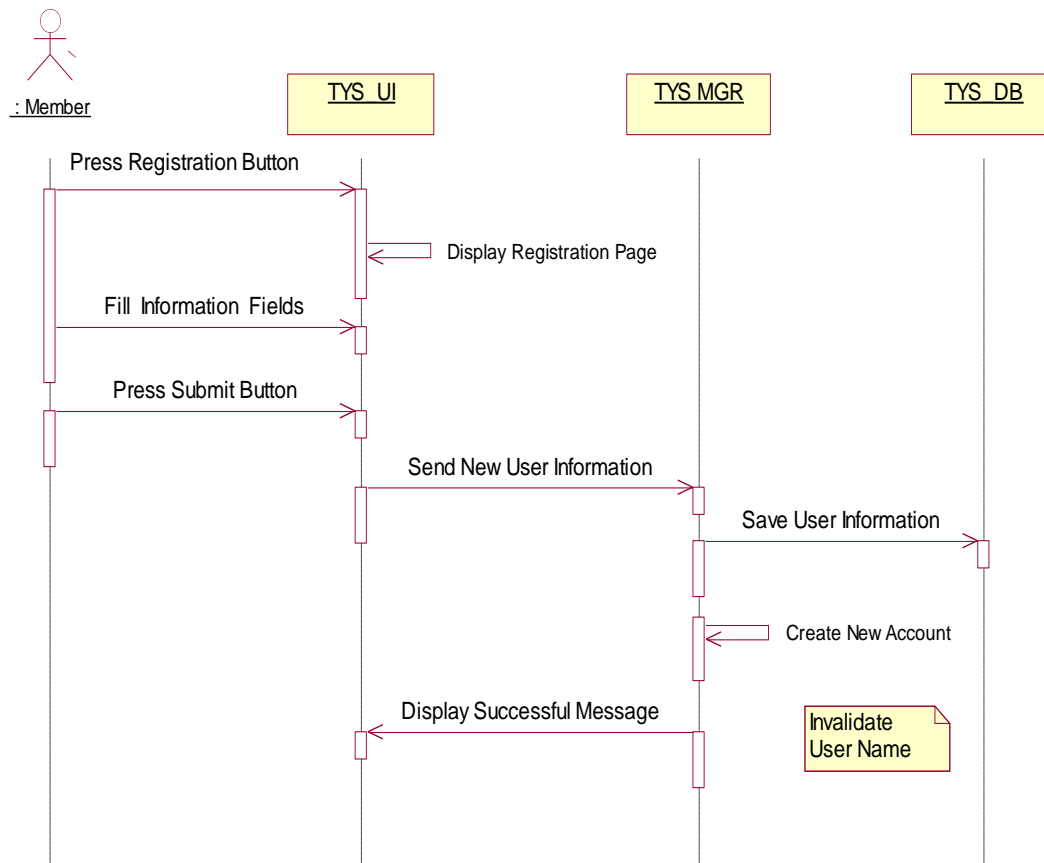


Figure 4.3 Register Sequence Diagram

Manage Program

The member after enter the system he/she can manage his/her program by register a new program and download a material as shown in figure 4.7.

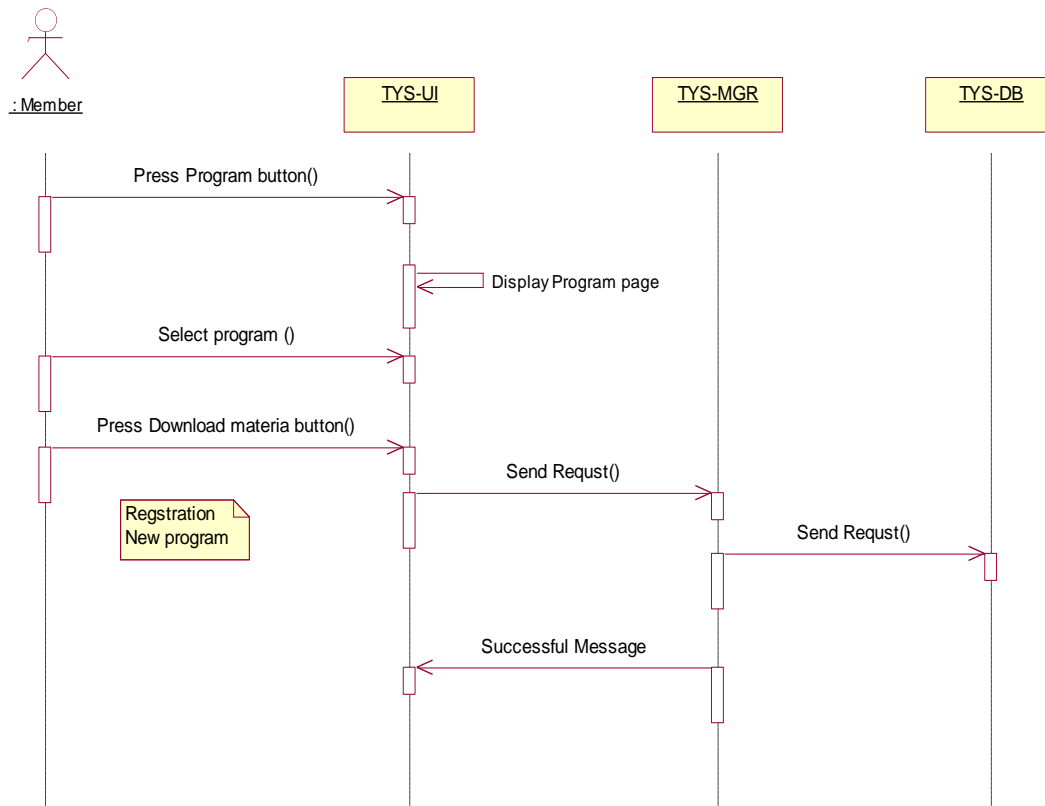


Figure 4.Manage Program Sequence Diagram

Edit profile

The users (Manager & Member) have an ability to change his/her or her profile information as shown in figure 4.8.

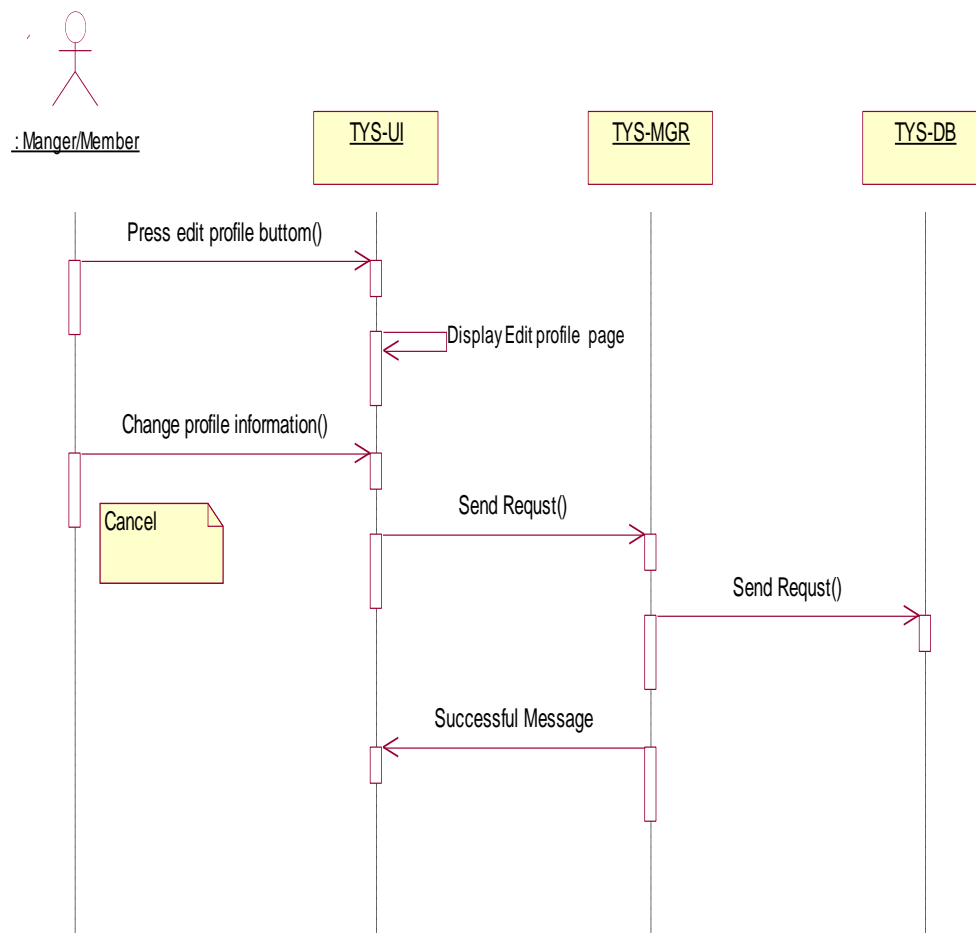


Figure 4.4Edit profile Sequence Diagram

Add Program

The manager has an ability to add a new program, through fill all the field about the program as shown in figure 4.9.

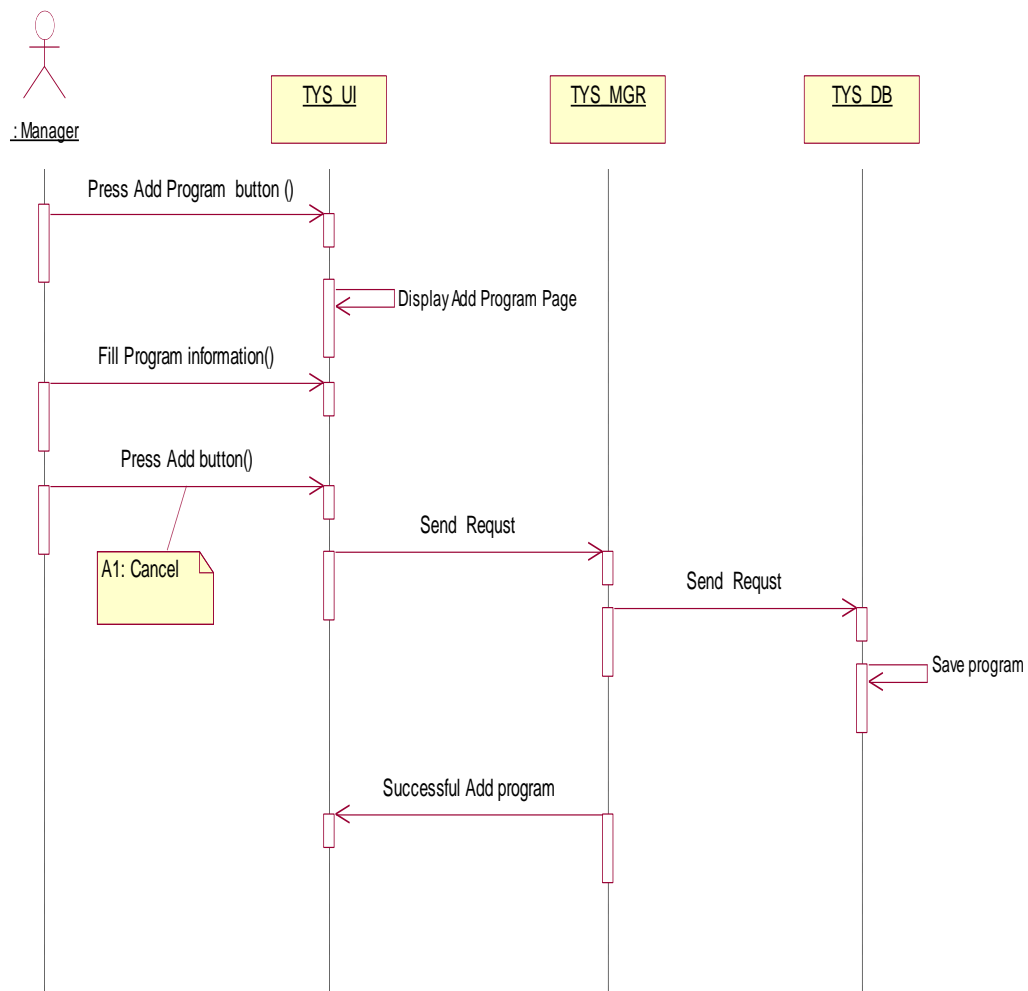


Figure 4.9 Add Program Sequence Diagram

Upload Gallery

The admin after enter the system he/she can upload a picture. The system will display the picture on the gallery page as illustrate in figure 4.10.

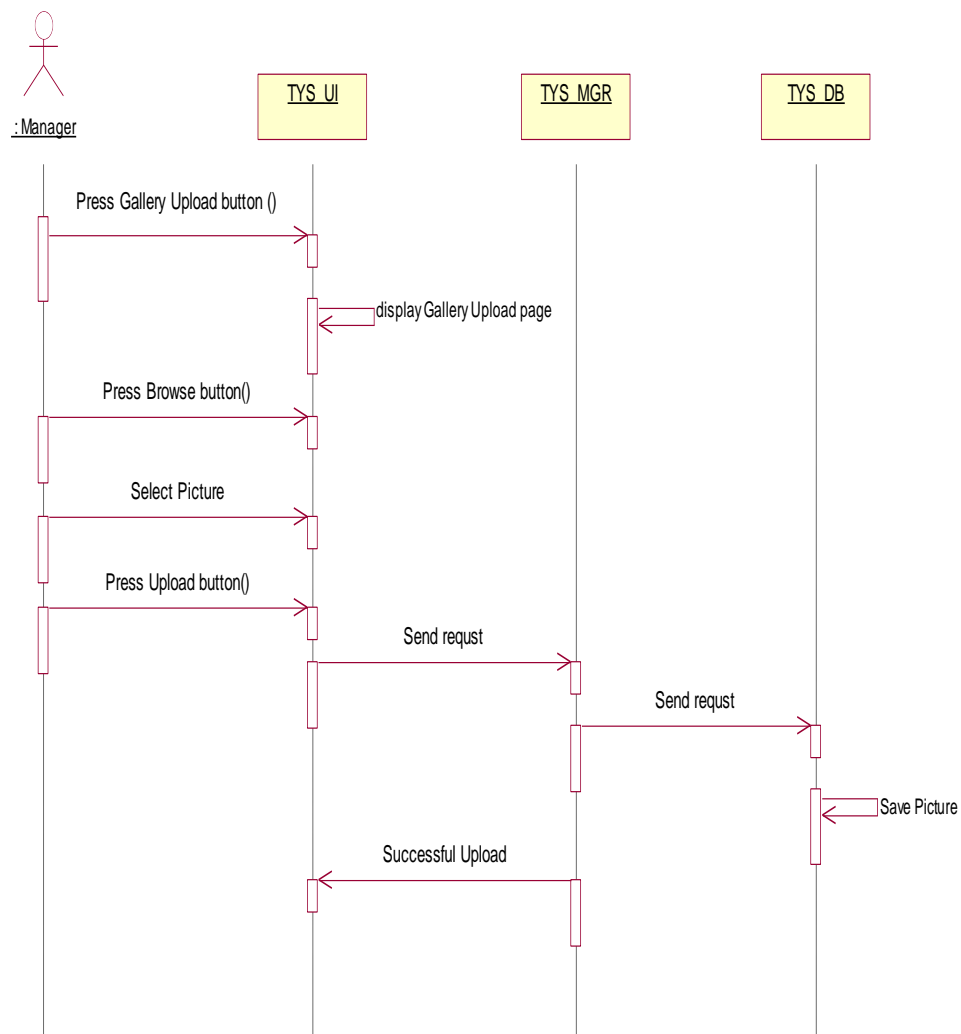


Figure 4.10Upload Gallery Sequence Diagram

Delete Program

The admin after enter the system he/she can delete the program. The system will display successful message to confirm the process as shown in figure 4.11.

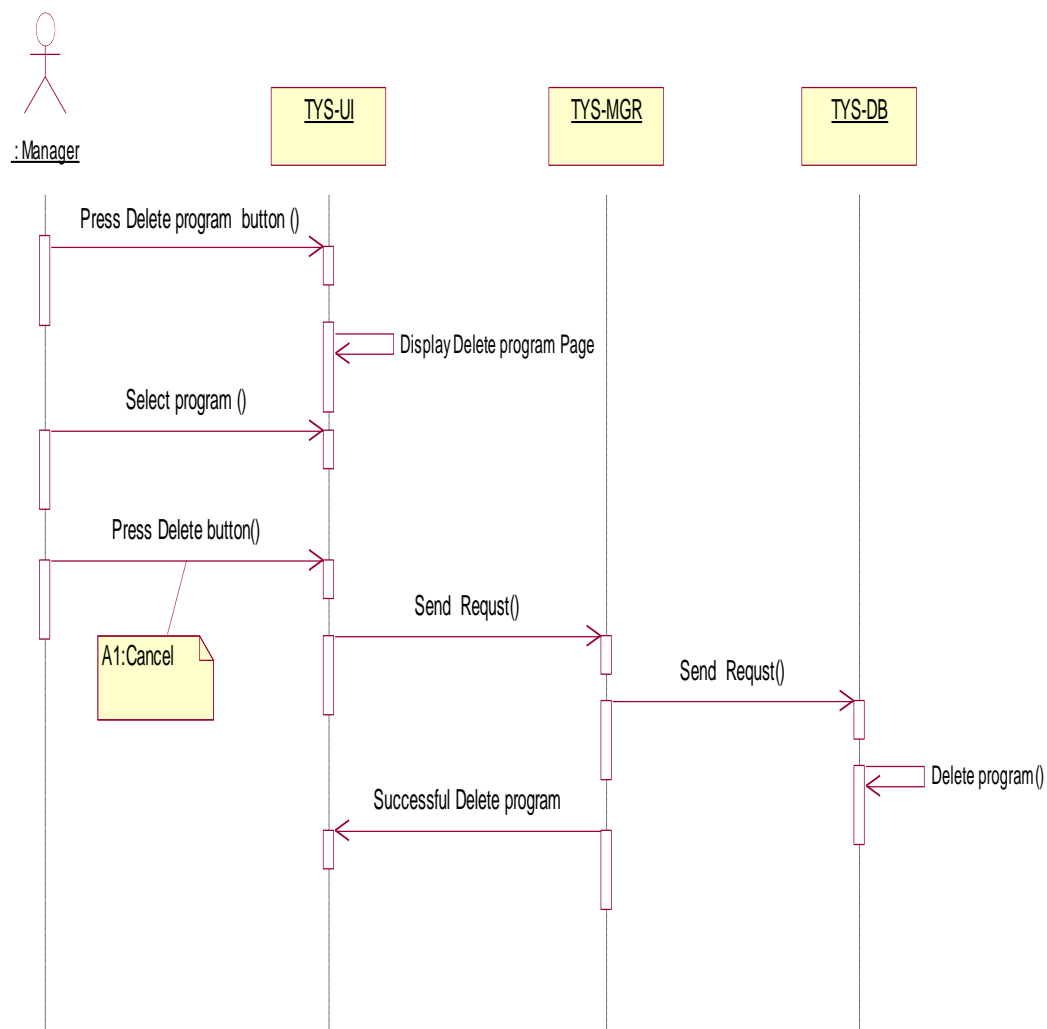


Figure 4.11Delete Program Sequence Diagram

Send Notification

The admin had an ability to send nonfiction to the member. The system will display successful message to confirm the send process as illustrate in figure 4.12.

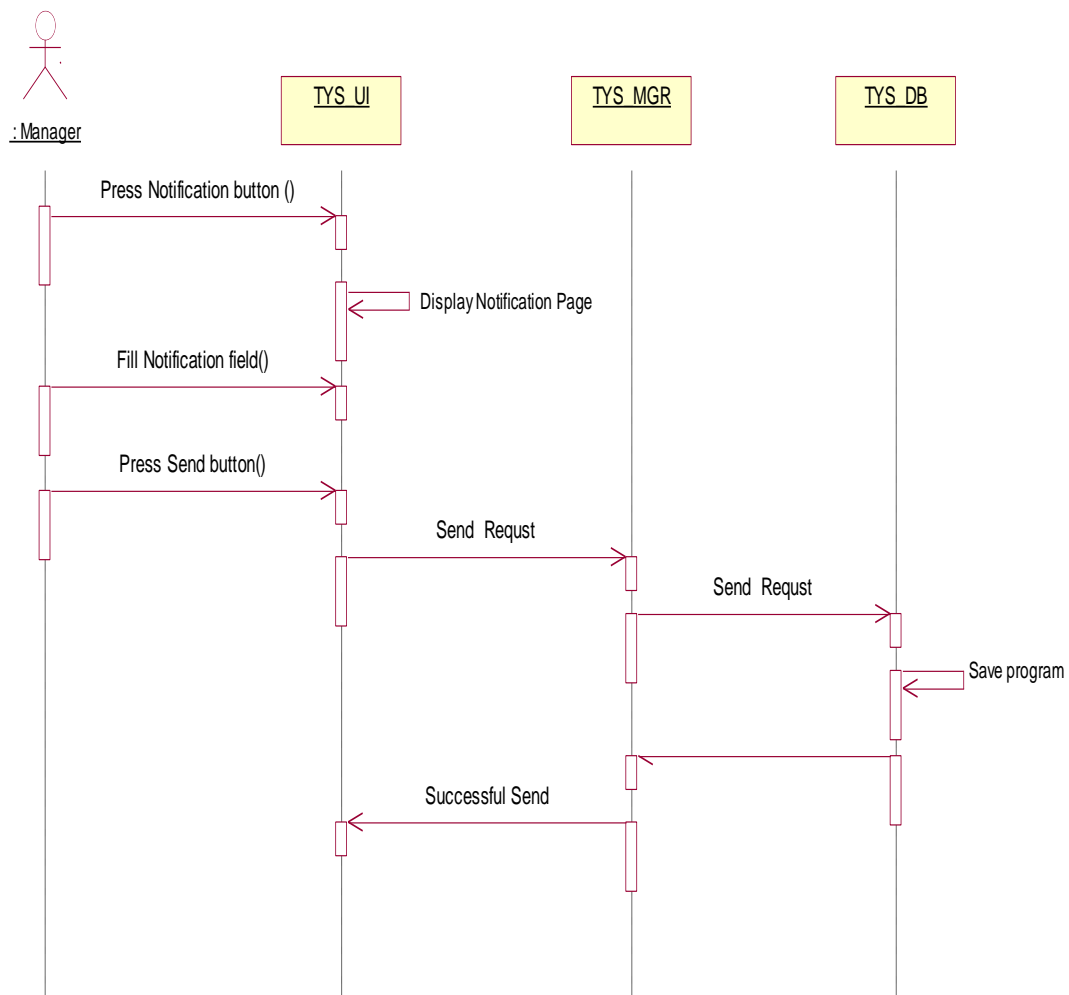


Figure 4. 12 Send Notification Sequence Diagram

E-services

The users (manager and member) they can be navigation through the system to get other services from the internet as shown in figure 4.13.

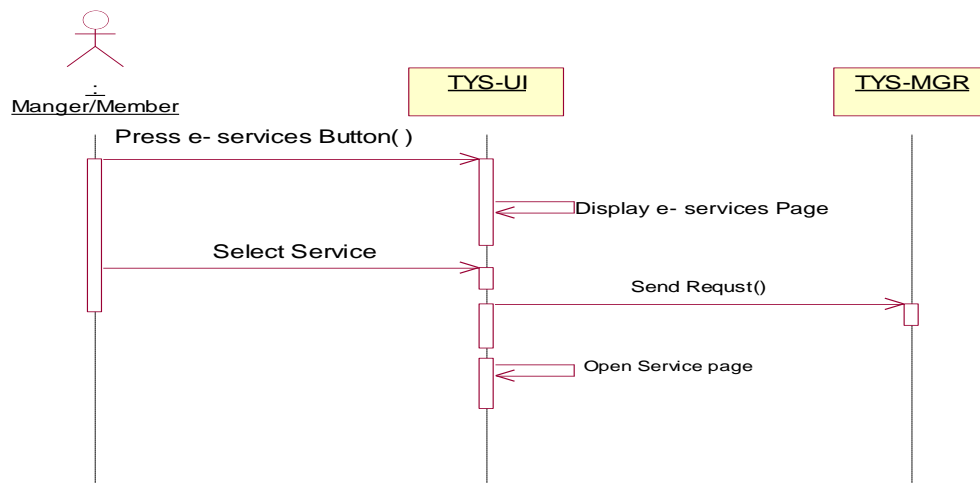


Figure 4.13eServices Sequence Diagram

Log out

When the users (Manager & Member) finish his/her work with the system, he/she can leave the system during press login out as shown in figure 4.14.

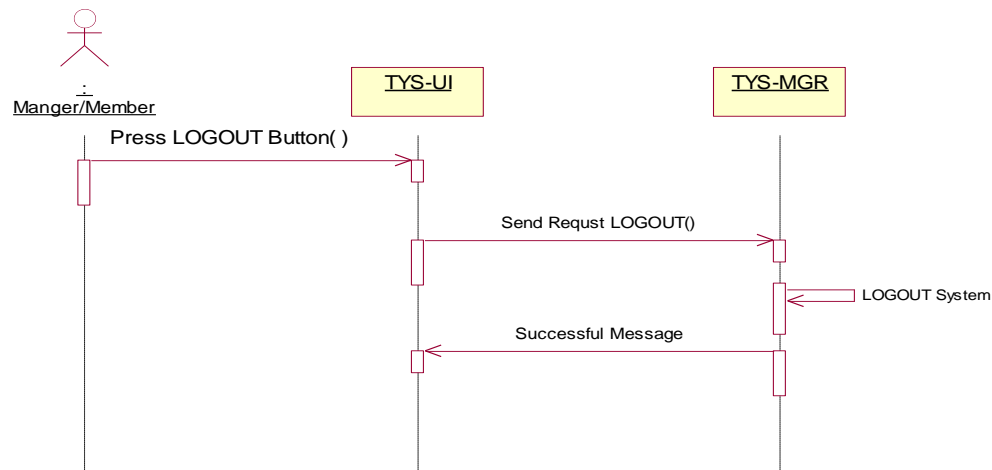


Figure 4.14Log Out Sequence Diagram

4.6 CLASS DIAGRAM

According to Elaasar, and Labiche, (2011), class diagrams are the basis for object-oriented analysis and design. The purpose of a class diagram is to represent the classes within a model. In an object-oriented application, classes have attributes (member variables), operations (member functions) and relationships with other classes. The UML class diagram can illustrate all these things fairly easily. Moreover, Class diagrams show the classes of the system, their relationships (including inheritance, aggregation and association), and the operations and attributes of classes. So Class diagrams are used for a wide range of uses, including conceptual / domain modeling and detailed design modeling.

The class diagram of the system will illustrate in figure 4.15. The class diagram content six classes that represented are teacher and admin; and two entities for account information and database to save assessment result and give reports.

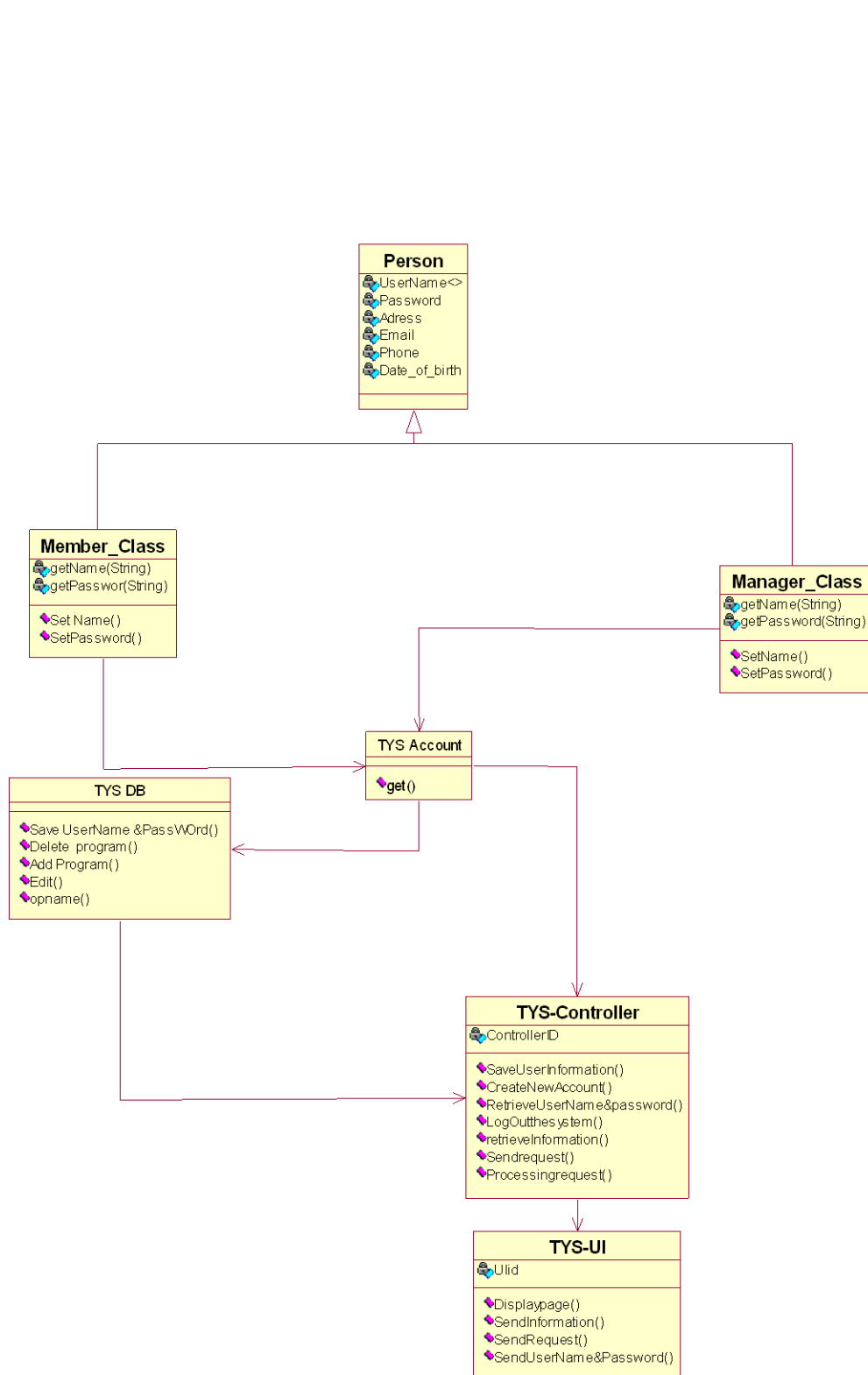


Figure 4.15 Class Diagram for TYS

4.7 SYSTEM INTERFACE

Homepage and Login Interface

Telecenter training management system is for help the people to training with many programs. Figure 4.16 illustrated the homepage of the system. As well as, through the homepage can the users (Manager and Member) login to the system by enter his/her validate username and password.



Figure 4.16 Homepage and login interface for TYS

Gallery Interface

The users can view to the image gallery for the staff and member and all the activity work in the telesenter as shown interface in figure 4.17.

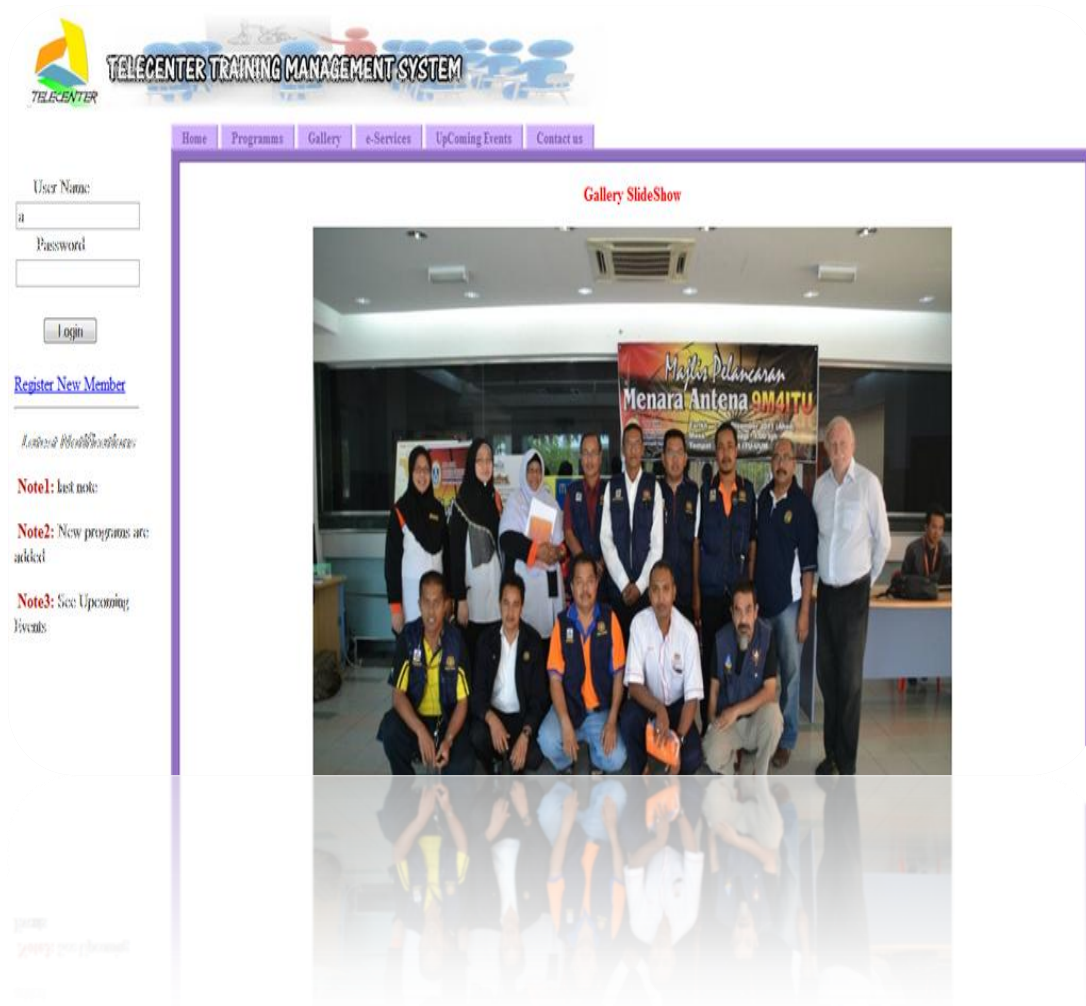


Figure 4.17 Gallery interface for TYS

eServicesInterface

The users (Manager and Member) have an ability to navigation to the other services by enter to the eServices and click on any hyperlink as illustrate in figure 4.18.

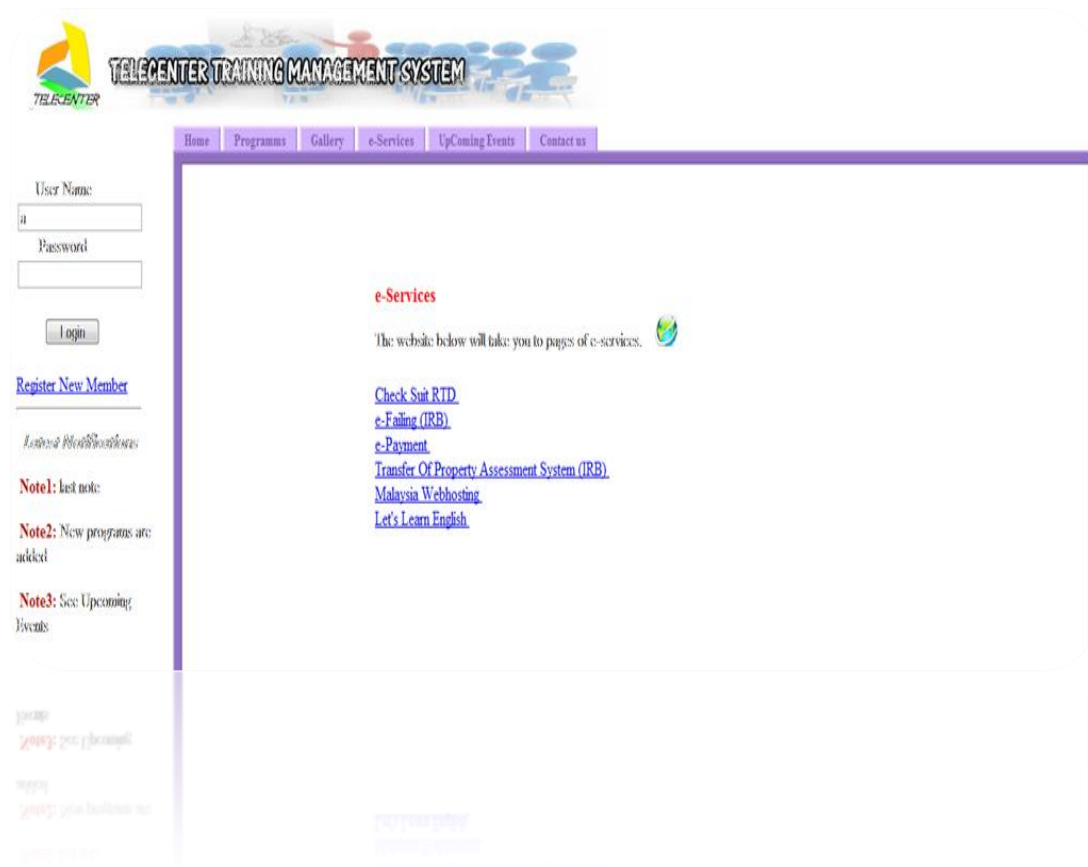


Figure 4.18 Gallery interface for TYS

Manage Program Interface

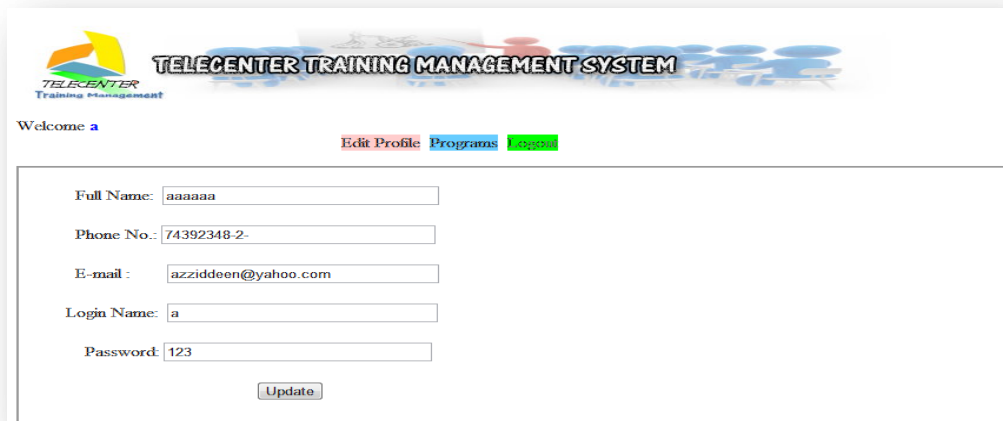
The member has an ability to manage his/her or her or her program by download a material, which uploaded from the administrative and register a new program, as shown in figure 4.19.



Figure 4.19 ManageProgram interface for TYS

Edit profile Interface

The member has an ability to change his/her account information by enter the new information and press upload as illustrate in figure 4.20.



The screenshot displays the 'Edit Profile' interface of the Telecenter Training Management System (TYS). At the top, the system's logo and name are visible. Below the header, a navigation bar contains three buttons: 'Edit Profile' (highlighted in red), 'Programs' (highlighted in blue), and 'Logout' (highlighted in green). The main content area is a form with the following fields: 'Full Name' (containing 'aaaaaa'), 'Phone No.' (containing '74392348-2-'), 'E-mail' (containing 'azziddeen@yahoo.com'), 'Login Name' (containing 'a'), and 'Password' (containing '123'). An 'Update' button is located at the bottom of the form.

Figure 4.20 Edit profile interface for TYS

Upload Gallery Interface

The Manager has an ability to upload the photos for the gallery page as illustrate in figure 4.21.

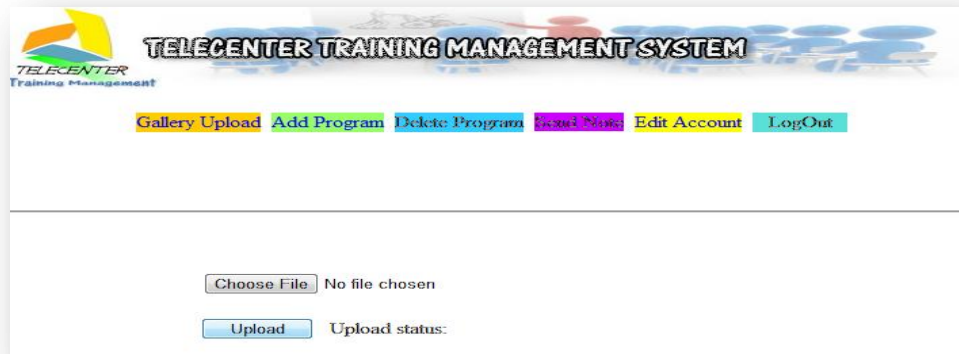


Figure 4.21Upload gallery Interface for TYS

Add ProgramInterface

The manager has an ability to add a new program by enter the program name and date to start program, as well as, description about a program by file or enter information in the box then press to add program. In additional, the manager has an ability to cancel all the process before make add as shown in figure 4.22.

TELECENTER TRAINING MANAGEMENT SYSTEM

TELECENTER Training Management

Gallery Upload Add Program Delete Program Send Note Edit Account LogOut

Program Name:

Date:

Venue:

Description:

No file chosen

Figure 4.22 Add Program Interface for TYS

Delete Program Interface

The manager has an ability to remove any program by selected and press to delete the program, after enter delete program page as illustrate in figure 23.

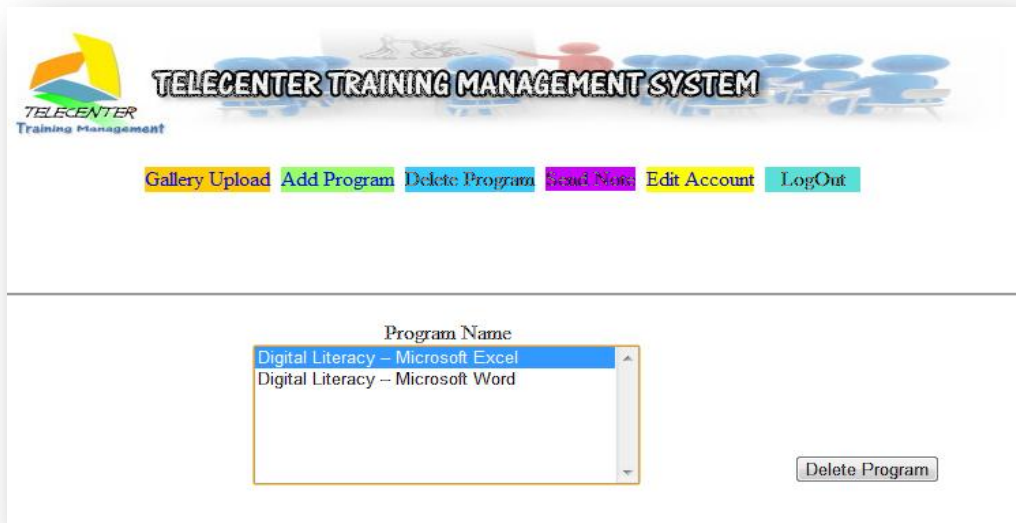


Figure 4.23 Delete Program Interface for TYS

Edit Profilefor Manager Interface

The managerhave ability to change his/her account information by enter the new information and press upload as illustrate in figure 4.24

TELECENTER Training Management

TELECENTER TRAINING MANAGEMENT SYSTEM

Gallery Upload Add Program Delete Program **Edit Profile** Edit Account LogOut

Full Name:

Phone No.:

E-mail :

Login Name:

Password:

Figure 4.24 Edit Profile for manager Interface for TYS

4.8 Summary

This chapter is content with the analysis about the system, the requirement, use cases and the entire diagram which describe the function of a Telecenter training management system. The result of running the system illustrated that target of the study is done successfully. The output of chapter four is the developed prototype for Telecenter training management system and the design of an interface for the prototype.

CHAPTER FIVE

DATA ANALYSIS AND EVALUATION

5.1 Introduction

According to Shiratuddin & Hassan (2010) the objective of evaluating user satisfaction is to discover what users think and feel about a proposed concept or in using a product, commonly an evaluation has three goals which are to compare, evaluate quality, and seek the weaknesses of a particular concept or product. The evaluation is a very important stage to judge on the outcome of development therefore, this chapter discusses and evaluates the joint findings of the prototype has been developed.

5.2 Functionality Evaluation and Analysis

Functionality testing is performed based on a standard set of tests followed by an interview. The usability test with end users is considered as one of the most essential methods in usability evaluation (Holzinger, 2005). According to Nielsen, (2006), the reason for performing the Functionality testing is to define the level of operability, usefulness and easiness of the system Functionality. WBTMS Functionality testing was accomplished through the survey via the usage of questionnaires filled by the participants. in this sense, 15 candidates were given a questionnaire to evaluate the system of the study. the respondent had been taught to use the system functionality and

the system prototype while objective and description had been informed to the participants. The questionnaire is adapted from (Davis, 1989) which covers two aspects which are in terms of usefulness and on terms ease of use. The questionnaire consists of two sections, general information and user evaluation. The first one is used to collect user's demographics and second section is used to evaluate the WBTTMS prototype in terms of usefulness and the easiness of use.

5.3 Questionnaire

Questionnaire method has been used to check the prototype usefulness and easy to use. The questionnaire designed according to the Technology Acceptance Model (TAM) by Davis (1989) and was answered on a five-point Likert scale. Participates in this evaluation were of total 15 participants. The questionnaire measured using the Likert Scale format ranging from strongly disagree to strongly agree and included two main sections, firstly the demographic questions, secondly prototype evaluation which include usefulness questions evaluation and easy to use evaluation questions. The questionnaire consisted of 14 questions exclude the participant's demographical information. The questionnaires have been collected after participants' answered the questions where the participants' response against each question and each group has been analyzed and calculated. Graphs and tables were used to represent the statistical data obtained from questionnaires. The questionnaire questions are available in

Appendix A. All statistical analysis was carried out using SPSS program, version 17 (SPSS Inc, Chicago, Il, USA).

5.3.1 First section: Demographic Data

The first section on the questionnaire was about user demographic data (Gender, Age and Educational Background). According to the analysis, majority of the participants were of male gender with percentage of 73.3% while female formed 26.7% in this study.

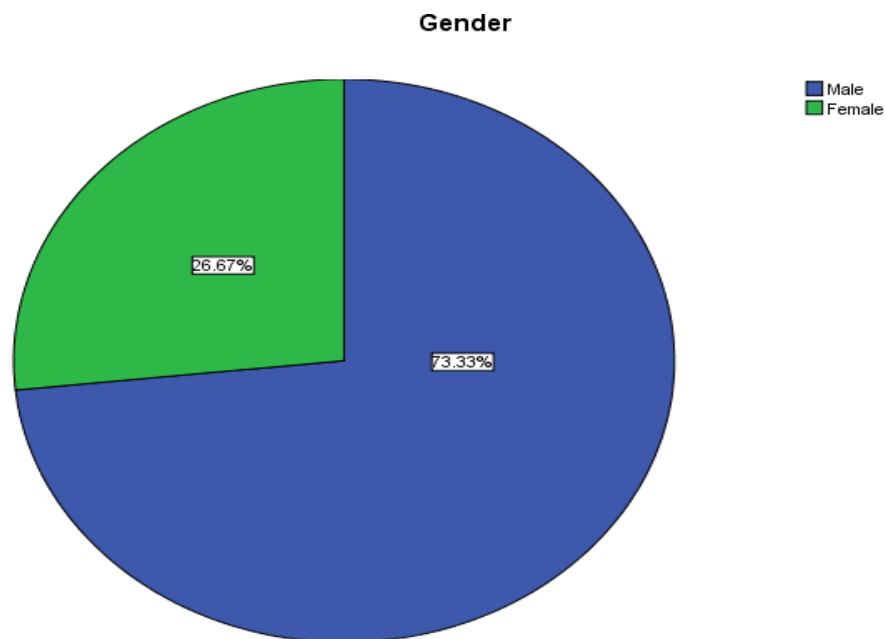


Figure 5.1: Gender

Age of the participants were 40.% for the age interval 18-28, 46.7% for the interval 29-39, and 13.3% were in the interval 40-50 as shown in Figure 5.2.

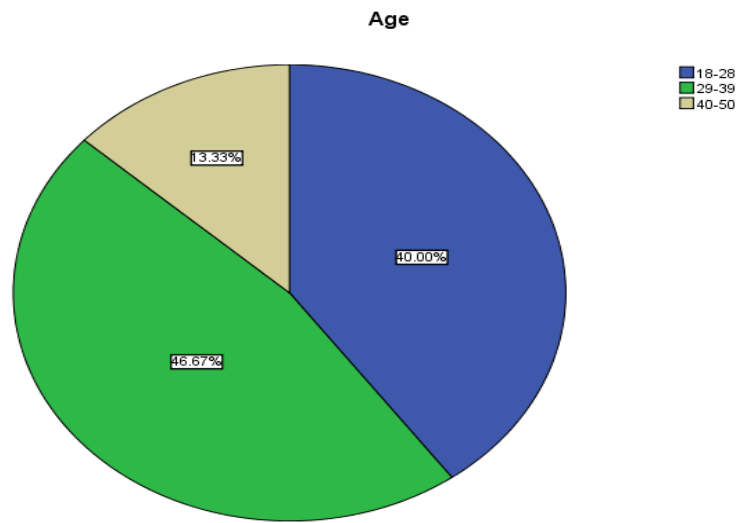


Figure 5.2: Age

The educational background of the participants in this study varies as following:
 13.3% as Highschool, 26.7% as Diploma, 33.3 as Bachelor , 20% as Master, and 6.7%
 as Others as shown in Figure 5.3.

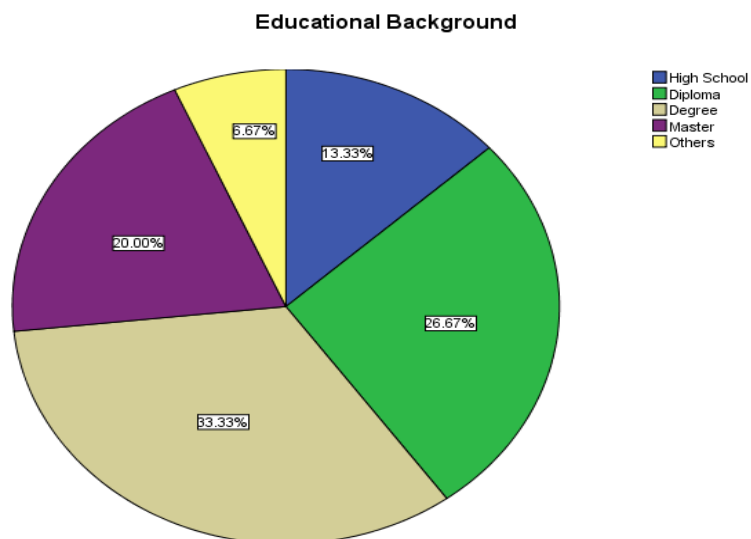


Figure 5.3: Education

Table 5.1: Demographic Data Summary

Gender	Frequency	Percentage
Male	11	73.3%
Female	4	26.7%
Age		
18 – 28	6	40%
29 – 39	7	46.7%
40 – 50	2	13.3%
50+	0	0%
Education		
High School	2	13.3%
Diploma	4	26.7%
Degree	5	33.3%
Master	3	20%
Others	1	6.7%

5.3.2 Second section: System Evaluation

The section consists of several questions are asking to evaluating and measuring usefulness and ease to use towards Telecenter training management system website. each question in the dimension has a rate from 1 to 5 (1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly agree). Table 5.2 below

5.3.2.1 Usefulness evaluation

The first section of the questionnaire questions was to evaluate the prototype usefulness. This section consists of six questions; Table 5.3 describes the number of

the respondent, the minimum and maximum answer, the mean and the STD deviation for this section.

Descriptive Statistics						
	N	Minimum	Maximum	Sum	Mean	Std. Deviation
Usefulness Q1	15	3	5	64	4.27	.704
Usefulness Q2	15	1	5	60	4.00	1.134
Usefulness Q3	15	4	5	71	4.73	.458
Usefulness Q4	15	4	5	70	4.67	.488
Usefulness Q5	15	2	5	67	4.47	.834
Usefulness Q6	15	1	5	60	4.00	1.134
Valid N (listwise)	15					

Since the six questions measure the prototype usefulness, the summation of the corresponding values of the (mean) row of each question has been divided by the total number of questions i.e. six questions, so the mean of the all mean values corresponding to the usefulness questions is 4.3566 which equal almost 72.6% indicates that measuring the prototype usefulness is high and agreed altitude.

5.3.2.2Ease of use evaluation

The second section of the questionnaire questions was to evaluate the prototype ease of use. This section consisted of eight questions; Table 5.4 describes the number of the respondent, the minimum and maximum answer, the mean and the STD deviation for this section.

Descriptive Statistics

	N	Minimum	Maximum	Sum	Mean	Std. Deviation
Ease Of Use Q1	15	4	5	66	4.40	.507
Ease Of Use Q2	15	4	5	66	4.40	.507
Ease Of Use Q3	15	4	5	63	4.20	.414
Ease Of Use Q4	15	4	5	68	4.53	.516
Ease Of Use Q5	15	1	5	62	4.13	1.187
Ease Of Use Q6	15	1	5	65	4.33	1.047
Ease Of Use Q7	15	2	5	62	4.13	.743
Ease Of Use Q8	15	2	5	60	4.00	1.000
Valid N (listwise)	15					

Since the eight questions measure the prototype ease of use, the summation of the corresponding values of the (mean) row of each question has been divided by the total number of questions i.e. eight questions, so the mean of the all mean values corresponding to the easiness of use questions is 4.265 which equal almost 53.312% indicate that measuring the prototype ease of use is high and agreed altitude.

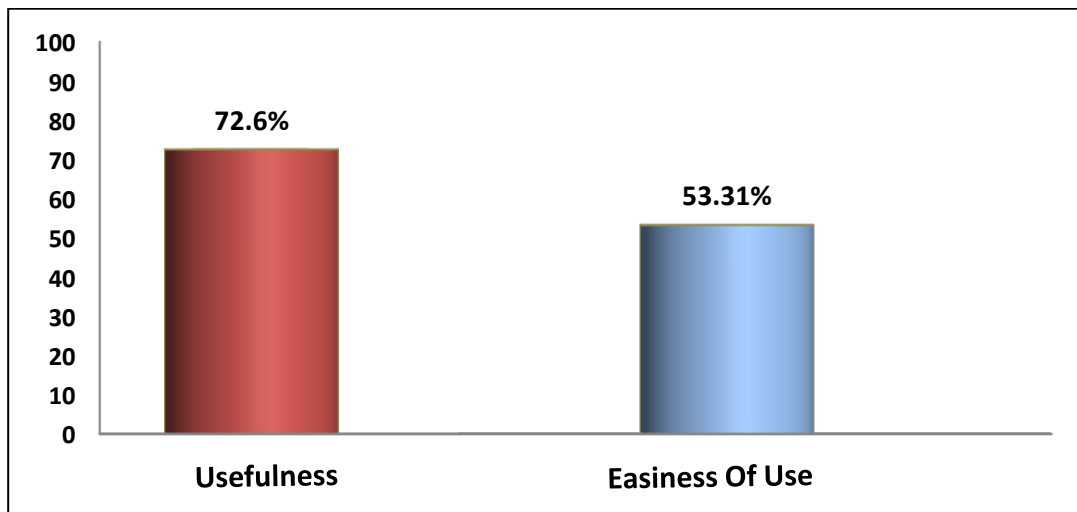


Table 5.3: Descriptive Statistics for all items

Appendix B contains a frequency chart for each question; each of them shows the percentage of user satisfaction on the system functionality which is represented from 1 to 5 degree that are: 1= strongly disagree, 2= disagree, 3= neutral, 4= agree, 5 strongly disagree.

5.4 Summary

Data analysis and evaluation is very important stage during or post the system development life cycle while some an approach of development evaluate each stage and other evaluate after finished whole, jointly both of them look for get feedback over the system development in order to improve the system functionality.

This prototype has evaluated to measure the usefulness perceived and perceived ease of use by using questionnaire contains a several questions evaluated the system functionality, SPSS software used to generate the descriptive analysis of data collected, frequency charts and pie charts got that illustrate and simplify data to be more measured and understandable. Finally this study has got the user agreed who have dealing with it at majority of system functionality factors.

CHAPTER SIX

CONCLUSION AND FUTURE WORK

6.1 Introduction

This chapter concludes the outcome of prototype website development of telecenter training management system at Yevern region in Libya which aims to facilitate the telecenter training programme registration, searching, and coming events to help organize various training programmes for the people of Yevern region in Libya. Moreover, this chapter summarizes the findings of this study and present the research contribution along with the limitations and future work.

6.2 Discussion

This study addressed the problem that face Telecenters in managing their training programme to their users which done manually by the telecenter staff as mentioned in Chapter One. The main objective of this study is to develop a prototype a website that that can manage the telecenter training programs for staff and users. The prototype has been developed using C# programming. The prototype undergone to evaluation to check the usefulness and easiness of use of the prototype by using the questionnaire technique which reveals that 72.6% of the participants indicated that the prototype

usefulness and 53.3% indicated that the prototype easiness of use which is high and agreed altitude.

6.3 Contribution of the Study

Despite of some out of control limitations but this study come up with new website for ITU-UUM telecenter which help the telecenter management to manage the telecenter training programs easily where this study reduce the effort and time of managing the telecenter programs for the people. This system is an important element in telecenters management environment. Since there has not been any data model for the telecenters management, this project helps defining the generic data model for this field. It is hoped that this project could cast some ideas and significance towards enhancing the telecenter training programs management systems and reducing time consumed, and thus assisting efficient management of staff and people activities. However, there are some problems and limitations in implementing this system discussed in the next section.

6.4 Limitations

This study focused on developing a website telecenter training management system prototype to perform the training programs process on telecenter through a system. The

prototype has been developed successfully. However there are some limitations as following:

- Web based prototype has been tested using a local server with test data only. The proper system needs to be tested using real data.
- The limited time to do more in depth research and study is another challenge to gather the complete information and understanding for this study area. Better result will be achieved if the project period is lengthened.

6.5 Future Work

After have achieved the main phases for this project moreover, there are some more suggestions can added to improve the project to be more effectiveness and efficient in providing services aspect such as make it tracking loss properties at all for example cars beside tracking missing people, one more important thing which is a coordination and communication on the website between all the other telecentersinvolved to in order to show a commontraining programs, reduce time and efforts on notifying about the available training management events.

REFERENCES

- Armstrong, E., Ball, J., Bodoff, S., Carson, D., Evans, I., & Green, D. (2004). *The J2EE 1.4 Tutorial for Sun Java Application Server Platform Edition 8.1 2005 Q1*. California: Sun Microsystems.
- Beckert, C. (1982). *Getting Started In Mass Media, Illinois*. National Textbook Company.
- Bihari, G & Charles, J. (1999). *Telecottages in Hungary: The Experience and the Opportunities*. Budapest, I. G. E. Ltd.
- Blake, C., Gibson, W. & Blackwell, C. (2003). Web-based training: What supervisors need to know. *Supervision*, 64(12), 3.
- Chung, S. & Yun-Sik Lee. (2003). "Modeling Web applications using Java and XML related technologies." System Sciences, 2003. In Proceedings of the 36th Annual Hawaii International Conference, Hawaii, 1-10.
- Davis, F. D. (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *International Journal of Human-Computer Interaction*, 7 (1), 58-69.
- Elaasar, M., & Labiche, Y. (2011). Diagram definition: a case study with the UML class diagram. *Model Driven Engineering Languages and Systems*, 364-378.
- Gabriel, T. (1991). *The human factor in rural development*. Umdon & New York: Belhaven Press.

- Gellersen, H.-W., & Gaedke, M. (1999). Object-Oriented Web Application Development. *Internet Computing*, 3(1), 60-68.
- Gsanger, H. (1994). *The future of rural development: Between the adjustment of the project approach and sectoral programme design*. Great Britain: Frank Cass & Co. Ltd.
- Falch, M., & Anyimadu, A. (2003). Telecentres as A Way of Achieving Universal Access. *The Case of Ghana Telecommunications Policy*. 2(27), 21–39.
- Francisco, E. (2001). *Telecenters for Social Economics and a Rural Development in Latin America and the Caribbean*.
- Hoffer, J. A., George, J. F & Valacich, J. S. (2002). *Modern Systems Analysis and Design (3rd ed.)*. Upper Saddle River, New Jersey: Prentice Hall.
- Holzinger, A. (2005). Usability Engineering Methods for Software Developers. *ACM*, 48(3), 4.
- Jensen, M., & Esterhuysen, A. (2011). (Paris: UNESCO Technical report No. CI-2001/WS/2). Retrieved Novemebr 12, 2011 from <http://unesdoc.unesco.org/images/0012/001230/123004e.pdf>
- Kwan, R., Wren, A., & Kwan, A. (2000). Hybrid Genetic Algorithms for Scheduling Bus and Train Drivers. *Evolutional Computation Journal*, 1(1), pp. 285 – 292.
- Lee, J., Wu, C. L., Lee, W. T., & Hsu, K. H. (2010). Aspect-enhanced goal-driven sequence diagram. *International Journal of Intelligent Systems*, 25(8), 712-732.

- Minges, M., & Tim, K. (2001). IP Telephony, ITU News. Retrieved November, 2, 2011, from www.itu.int/ITU-D/ict/cs/material/IPTelephony.pdf.
- Minotti, J. & Giguere, P. (2003). The Realities of Web-based Training. *The journal of computer information systems*, 2(30), pp. 411- 416.
- Nielson, J., & Tahir, M. (2001). *Homepage Usability 50 Websites Deconstructed*. New Riders, p. 69.
- Nielson, J. (2006). Quantitative Studies : How many users to test Alertbox. Retrieved December 3, 2011, from http://www.useit.com/alertbox/quantitative_testing.html.
- Parkinson, S. (2005). *Telecenter Access and Development; Experience and Lessons from Uganda and South Africa.*, Warwickshire: ITD publishers, Kampala: Fountain Publishers, and Ottawa: IDRC.
- Qisisang, P., Amir, B., Victor, C., & Chris, S. (1999). Service Scheduling for General Packet Radio Service Classes. *IEEE Explore*, pp. 1229 – 1233.
- Rogers, E. M. (2003). *Diffusion of Innovations*. 5th ed., New York: Free press.
- Ruffo, G., Schifanella, R., Sereno, M. & Politi, R. (2004). Walty: a user behavior tailored tool for evaluating Web application performance. *IEEE*, 4(1), 22-27.
- Shiratuddin, N., & Hassan, S. (2010). *Design research in software development constructing and linking research questions, Objectives, Methods and outcomes*. Malaysia Sintok: Penerbit Universiti Utara
- Shneiderman, B. (2000). Universal design. *Communication of ACM*, 43(5), 84–91.

- Serrano, M. Á., Maguitman, A., Boguná, M., Fortunato, S., & Vespignani, A. (2007).
Decoding the structure of the WWW: A comparative analysis of web crawls.
ACM Transactions on the Web, 1(2).1-25.
- Sonia, J. (2000). *Gender Perspective on Telecenter*. ITU – Telecom Americas 2000 -
Telecom Development Symposium Communications: Universal Access and
Community Telecenters. P. 8
- Taguchi, M., Suzuki, T. & Tokuda, T. (2003). A visual approach for generating server
page type Web applications based on template method. *IEEE*, 1(3), 473-477.
- UNESCO (2005). *Facts And Figures About Rural Water* Retrieved November 22,
2011 from <http://portals.wi.wur.nl/ICWMTOT/?page=4357>
- Victor, T., & Nazaruddin, M. (1992). *Issues in Rural Development in Malaysia*.
Malaysia: Dewan Bahasa dan Pustaka.
- Watanapitayakul, T. (2001). *Session Authentication for Web Services in Mobile
Computing*. MSc Thesis, Mahidol University, Salaya, Nakhon Pathom, Thailand.
- Wei, H., Ru, L., Maple, C., Hongji, Y., Foskett, D. & Cleaver,
V. (2008). Web Application Development Lifecycle for Small Medium-Sized
Enterprises (SMEs). *IEEE*.
- Weinreich, H., Obendorf, H., Herder, E., & Mayer, M. (2008). Not quite the average:
An empirical study of web use. *ACM Transactions on the Web*, 2(1).1-26.
- Zhang, H., Zhang, Z., & Zhu, J. (2008). SI4WAC: A Semantic-Based Infrastructure
for Web Application Cooperation. *IEEE*.

APPENDIX

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UUM / ITU / K-27
18 January 2012

TO WHOM IT MAY CONCERN

Letter of Recommendation

I would like to confirm that **Aziden Mohamed Salem Abokwet** has registered in the Information & Communication Technology programme. He has collected all the information regarding the Kg Tradisi Lembah Keriang Telecenter managed by ITU-UUM. In addition, **Aziden** was very cooperative and followed all the procedures at the Telecenter. **Aziden** was able to accomplish his MSc project with the CoE and he was able to collect the required valuable information

We are happy that the “**WEB BASED TELECENTER TRAINING MANAGEMENT SYSTEM**” has benefitted and is useful to all parties to improve the interaction between the Telecenter and the Telecenter members.

We would like to express our best regards and appreciation for **Aziden's** contribution.

Thank you.

Sincerely


(Assoc. Prof. Dr. Wan Rozaini Bt Sheik Osman)
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STATUS INSTITUTION

QUESTIONNAIRE

WEB BASED TELECENTER TRAINING MANAGEMENT SYSTEM AT

YEVERN REGION IN LIBYA (WBTMS)

SYSTEM PROTOTYPE EVALUATION

This questionnaire is divided into two sections (Section A, and B). Section A: addressing respondent general information; Section B measuring the Perceive of Usefulness and the Perceive of Ease of Use of WBTTMS. Respondent are required to answer all the questions in order to complete the session.

YOURS, Aziden Mohamed Salem Abokwet (806952)
College of Arts and Sciences (CAS)
Universiti Utara Malaysia (UUM)

Section A: Respondent General Information

This segment is about your background information. *Please fill up the blanks and mark \surd where appropriate.*

1. Gender: [] Male [] Female
2. Age: 18-28[] 29-39[] 40-50 [] Above 50 [].
3. Educational Level: High School [] Diploma [] Degree [] Master [] Others []

Section B

For the next segments, Please rate the usefulness and ease to use of this system by tick an appropriate box.

.1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

Question Number	Questions	Evaluation Rate						
		S-Disagree	1	2	3	4	5	S-Agree
PERCEIVED USEFULNESS								
1	The WBTMS is useful.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
2	It saves my time when I use the WBTMS.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
3	It saves my effort when I use the WBTMS.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
4	The WBTMS gives me more control over the Telecenter activities.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
5	The WBPTMS makes the things I want to accomplish easier to get.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
6	It does everything I would expect it to do.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
PERCEIVED EASE OF USE								
		S-Disagree	1	2	3	4	5	S-Agree
7	It is easy to use.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
8	It is flexible use.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
9	It is simple to use.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
10	It is user friendly.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
11	It requires the fewest steps possible to accomplish	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
12	I can use it without written instructions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
13	I can recover from mistakes quickly and easily	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
14	I can use it successfully every time.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

Thank you

Frequency Charts of each Question

Descriptive Statistics

	N	Minimum	Maximum	Sum	Mean	Std. Deviation
Gender	15	1	2	19	1.27	.458
Age	15	1	3	26	1.73	.704
Educational Background	15	1	5	42	2.80	1.146
Usefulness Q1	15	3	5	64	4.27	.704
Usefulness Q2	15	1	5	60	4.00	1.134
Usefulness Q3	15	4	5	71	4.73	.458
Usefulness Q4	15	4	5	70	4.67	.488
Usefulness Q5	15	2	5	67	4.47	.834
Usefulness Q6	15	1	5	60	4.00	1.134
Ease Of Use Q1	15	4	5	66	4.40	.507
Ease Of Use Q2	15	4	5	66	4.40	.507
Ease Of Use Q3	15	4	5	63	4.20	.414
Ease Of Use Q4	15	4	5	68	4.53	.516
Ease Of Use Q5	15	1	5	62	4.13	1.187
Ease Of Use Q6	15	1	5	65	4.33	1.047
Ease Of Use Q7	15	2	5	62	4.13	.743
Ease Of Use Q8	15	2	5	60	4.00	1.000
Valid N (listwise)	15					

